THE IRON AGE

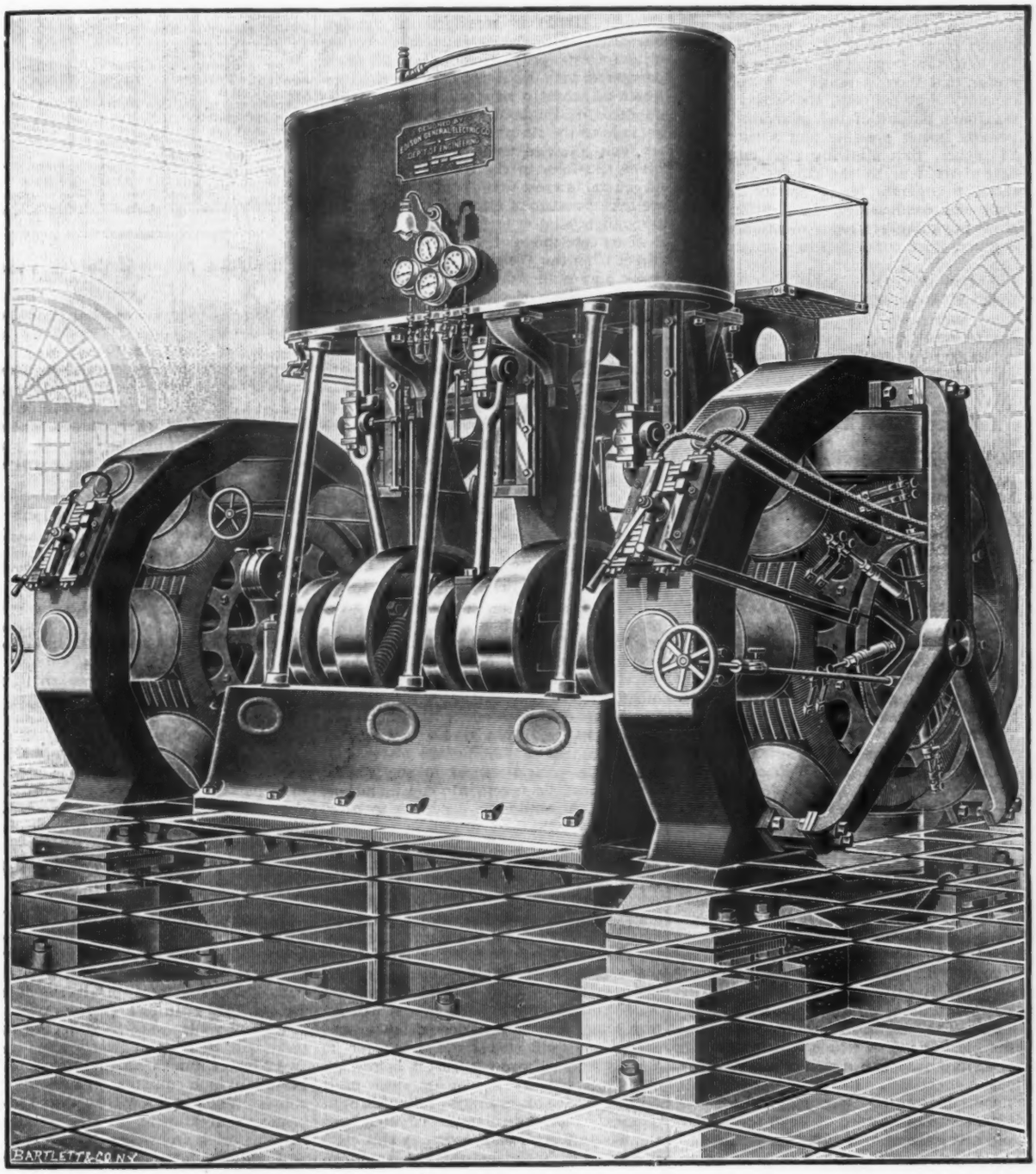
THURSDAY, APRIL 28, 1892.

The Edison Multipolar Generator and Triple-Expansion Engine.

With the present great cost of the land required for some central stations it becomes essential to reduce the floor space occupied by machinery as much as possible. In recognition of this fact the Edison General Electric Company have recently brought out a new line of central station units consisting of two multipolar dynamos coupled direct to a triple expansion engine, and ranging in capacity from 50 to 800 horse-power. This combination does away with all belting and countershafts, thus securing increased efficiency and a large saving of floor space—two most important factors in central station practice.

The multipolar generator is peculiarly adapted to this purpose, as it may be designed to generate any desired electrical output, at an armature speed corresponding to that of a slow-speed engine. This type presents the additional advantages of requiring but small floor space, of being able to withstand sudden variations of load and to carry heavy loads continuously without danger of overheating.

Through the courtesy of the *Electrical Engineer* we are enabled to present an engraving showing one of these generators. The cut shows the condensing box and foundation of the engine. The engine is of the triple expansion, three-crank, inverted cylinder, automatic condensing type, well proportioned throughout, having large wearing surfaces which can be easily adjusted. The bed plate to which the main bearing boxes of the crankshaft are cast is strong and is firmly bolted to a massive foundation box, which also carries the dynamo frames. Thus perfect rigidity between engine and generators is insured. The crankshaft is of forged steel, fitted with cast-iron balance disks to which the crank pins are fitted. There are two bearings to each crank and an additional large bearing on each end of the shaft to carry the arma-



THE EDISON MULTIPOLAR GENERATOR AND TRIPLE-EXPANSION ENGINE.

ture. On the shaft are three eccentrics each operated by its own independent governor, so that the point of cut off in each cylinder is changed equally with the load, thereby doing away with any tendency to race in case the total load is at any time thrown off or any accident happen. Strong cast-iron columns carry the cylinders, which are bolted together, and the engine is strong, compact and well arranged; indeed, these engines are almost *fac-similes* of the latest and most improved types at present in use on the finest ocean steamships, with necessary additions to render them as highly efficient for electric generating purposes as their prototypes are for marine work. They are calculated for the maximum efficiency point at about 12½ per cent. below the normal maximum capacity of the generator, and have a range to a maximum capacity of 20 per cent. above the normal maximum output of the generator at 160 pounds initial pressure and a vacuum of 24 inches, thus allowing each engine, in case of accident to the condensing apparatus, to operate the generator satisfactorily non-condensing. In addition to the many advantages already mentioned these engines, when connected to a suitable condenser, will, it is claimed, reduce the consumption of fuel considerably. This is an item of importance in electric light stations, increasing their storage, boiler and engine capacity.

The Watervliet Arsenal.

Business at the Watervliet, N. Y., arsenal is rushing just at present. The work of assembling the heavy guns at the new gun shop goes on rapidly. Both 10 and 12 inch guns are under way. The work is speedily done with the many new appliances. Six of the immense lathes from the Pond Tool Company's works are now in operation in the north wing, and another will soon be in readiness. As fast as they are placed and tested they are put at work on the different pieces of heavy guns. The full complement of these heavy lathes will be 23, 12 of which will be in the north wing and 11 in the south, which is fast assuming the appearance of another mammoth gun shop. The ten 5 inch siege rifles and 10 and 7 inch siege howitzers, which have been under way for some time, are nearly finished. For some days practical tests have been made with some of the 25 $3\frac{2}{10}$ breech-loading steel rifles, and the tests will continue until all are proven. The preparation of the new south wing is advancing rapidly. Workmen have already placed a large amount of the substantial flooring. A small portion, however, of the immense space is completed. The work on the 180-ton crane for the south wing draws slowly toward completion. The arrangement of the parts and the operating machinery is necessarily slow on account of their number and size. The workmen are now stringing the electric wires which will be used in operating it. The dynamo for this purpose has arrived. It is another from the Thomson-Houston Company, calculated for a speed of upward of 1000 revolutions and a voltage of over 500.

The regular meeting of the Western Pennsylvania Engineers' Society was held in that city on Tuesday evening, the 19th inst., A. E. Hunt presiding. Sixty-four new members were elected, the largest number ever elected at one time since the organization of the society. Geo. S. Davidson read a paper, the subject of which was "Discharge Observations of Large Streams." The paper was a review of various observations taken to arrive at a proper basis for determining the amount of water discharged by a stream under varying conditions within a given time. At the next meeting of the society a paper entitled "Iron Mill Buildings" will be read by John Siebert.

The Foreign Tin-Plate Trade.

The interest in tin plate in this country chiefly centers in the new manufacturing enterprises that are springing up, but little attention has been given as yet to the methods of carrying on trade. The probabilities are that it will fall in with other sheet metals, and be conducted in much the same general way. It would be of interest in this connection to learn how the tin-plate trade is managed in foreign countries, especially England and Wales, although its proportions are small there compared with what they are here. In a letter we recently received from a correspondent in England, incidental reference is made to the tin-plate trade of that country, and likewise some little attention is given to affairs in the United States. As of general interest to the trade at this time, we take pleasure in quoting from our correspondent's letter as follows:

Many consumers of tin plates here buy direct from the Welsh works, the same as many houses in America buy direct without the medium of a foreign agent. Nearly all the Welsh works are represented in Liverpool and about a dozen works are represented in London, the commissions paid these agents varying from about ¼ to 1 per cent. The Welsh manufacturers as a general rule are adverse to selling direct to the consumer, for, as he is at some distance from London, or from the center in which the tin plate is consumed, he is not in a good position to know of the standing or credit of the buyer, and, furthermore, he prefers to protect his agent in all cases. The jobbing of tin plates in England is done on an extremely small scale. There are no such tin-plate houses in London and Liverpool as are to be found in Boston, New York and Philadelphia. Many ironmongers carry in stock a few boxes of tin plates, and I doubt if the average stock will be found to be much more than this. When the American manufacturers are able to supply the demand for home consumption, I think it will greatly change, if not do away with, the present mode of jobbing tin plates. Of course the great distances in the United States must be taken into consideration; therefore, it would be necessary to carry larger stocks than are carried here.

The demand from the United States at the moment is principally for light weight plates, such as 85, 90, 95 and 100 pounds to 112 sheets of 14 x 20, and I am almost led to believe that the present demand for black plates—that is, uncoated tin plates—is greater than even for tin plates themselves. If the demand for light plates continues, as at present it promises to, I think the use of such gauges will retard somewhat the American manufacture, for I understand that the demand for 36 and 38 taggers from America is as great as ever, and I doubt if the American mills relish the idea of having to roll such light gauges. The trade in terne plates has been the most affected, and naturally this class of plate will be the first that the American manufacturer will endeavor to produce, as it is an easier product to make than the highly finished and heavily coated tin plate. Of course, as you know, the consumption of terne plate in this country is practically nothing, as no terne plates are used for roofing purposes, though a few may be consumed in making packing boxes and in such work. I send you a table giving the foreign exports of tin plates and boxes of black plates from this country for the years 1890–91, and also for the year 1881, which will be interesting as showing the growth of the trade. I cannot tell exactly what proportion of black plates is included in these figures, but I think it would be a very small item. The large trade in this commodity that I refer to has sprung up but very recently.

Statement of Tin Plates and Boxed Black Plate Exported from United Kingdom to all Ports, Year Ending December 31.

	1881.	1890.	1891.
United States ports..	3,134,402	5,074,887	5,416,462
Canada and B. N. America.	255,556	425,862	420,051
Mediterranean and Black Sea... ...	179,107	720,188	861,488
Holland, Germany, Belgium...	139,520	186,328	148,754
Norway, Sweden, Baltic.....	118,921	173,331	176,092
China and East Indies	93,351	95,571	137,650
France and Switzerland.....	174,290	89,004	96,452
Australia, Tasmania, New Zealand	137,329	113,061	201,225
Spain and Portugal.	96,128	122 002	141,547
Central and South America..	89,002	130,421	188,784
West Indies.....	13,493	17,898	19,994
Cape Ceylon and Mauritius....	7,282	11,229	12,447
Africa and outside islands	3,342	16,229	12,426
Unclassed	3,090	4,814	3,560
Totals.....	4,444,823	7,180,815	7,836,532

Brown & Sharpe's Enlargement.

Work has been resumed at Providence, R. I., on the three-story 166 x 56 feet extension of the Brown & Sharpe Mfg. Company's No. 3 building, the stone foundations of which were laid last year, and it is expected that the structure will be ready for use in August or September. The principal object of the enlargement was to secure more room for storing patterns, 40,000 or more of which are in use, but space will be reserved on the first floor for bins for the molding sand brought from the Hudson River, near Albany, N. Y. There will be four bins, each 12 x 24 feet, and 10 feet in depth, the total capacity of which will be 600 tons. The sand will be loaded on dump cars at the roadway from Holden street, and conveyed along an elevated track, descending 6 inches to the 100 feet, to the top of the bins; and from the bins it will be taken through openings near the floor across the gangway to the foundry. There will be an office for the man in charge of the patterns, and the remainder of the lower story will be used for storing the large patterns, and that part of the second and third floors above the sand bins is to be reserved for metal patterns. Shelves will be placed throughout the rest of the building, with passages between them, so that ready access can be had to the thousands of patterns in regular service.

The extension, like the other buildings, will have iron stairways and will be as nearly fire-proof as possible. It will be divided by brick partition walls, 12 inches thick, with double doors, so that in the event of fire the flames can be kept from spreading. The brick walls are to be 20 inches thick; there will be 20-inch iron girders resting on 12-inch columns on the first story, and 11 and 10 inch columns on the two floors above. The girders will support 15-inch I beams, 8 feet apart, and between these I beams brick arches will be turned. The roof will be formed by turning a brick arch similar to those supporting the floors, and will be filled at the top of the beams with concrete and covered with tarred paper and gravel. The water will be carried down through the columns.

The Promenade street end will cover the artesian wells from which the manufactory is supplied with water. There a trench has been excavated and the bottom covered with concrete. A brick arch will be constructed over the pipes, which will afford a passageway 4½ feet in width, to be entered through an arched opening opposite the foundry.

The Chicago Elevated Railroads.

Delays on the part of the company having the contract for furnishing the structural iron for the South Side Alley "L" road will not permit the running of trains from Congress street to Fortieth street till June 1. It was expected that the road would be ready May 1. Twenty-five cars from the Jackson & Sharp Company's shops, at Wilmington, Del., have already been shipped, and 25 more will be delivered May 1. The structural iron has not arrived to build the storage platforms for the cars at Fortieth street. Twenty engines from the Baldwin Locomotive Works will arrive in Chicago within a few days. The engines are compound and weigh 28 tons each. The drive wheels are 42 inches in diameter. The wheel bars of the drive wheels are 5 feet shorter than those of locomotives used on suburban roads. This enables the engines to turn around curves of 90 feet radius. Hard coal only will be used. This will be the heaviest item of expense to the road.

Hundreds of applications are received by the company daily from persons wanting positions as firemen, engineers, conductors, trainmen and gatemen, but only men who have some experience on "L" roads will be used. The men will not be hired before May 15. The extension to Sixty-third street is expected to be in operation by next March.

The Lake street elevated still stands in its unfinished condition. Reports have been current from time to time that Eastern capitalists had purchased the franchise of this road and would soon undertake the work of completing it and putting it in operation. So much capital has been invested in this enterprise that it seems unreasonable to suppose it will be permitted to lie much longer as a dead investment.

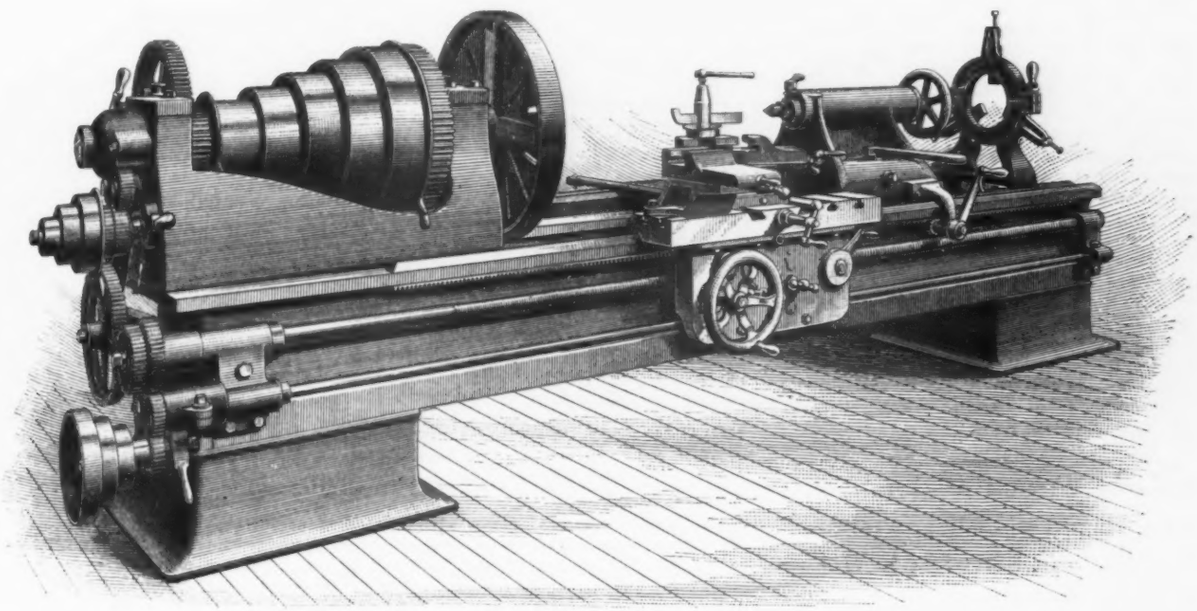
An ordinance was signed by the Mayor recently for a new elevated road, to be known as the Metropolitan, which will cover a populous section of the west side of the city. The capitalists interested are those who are building the Alley elevated on the south side. They propose to erect a stationary bridge over the south branch of the Chicago river at an altitude sufficient to permit vessels with reasonably high masts to pass under it. In connection with this enterprise it is said to be the intention of the Metropolitan company to connect with the South Side Alley "L" some place between Harrison and Van Buren streets, thus affording a complete line of elevated transit from the western, northwestern and southwestern sections of the city to the World's Fair grounds.

How to Harden Milling Cutters.—William D. Shaw, superintendent of Charles F. Elmes' machinery department at Chicago, informs the Crescent Steel Company, through whom the information is made public, that he never loses large milling cutters in hardening. He heats slowly in a covered, slow forge fire of coke without flame, as he thinks the reason for teeth cracking off is that they are made coarse and weak in grain by jets of hot air in a brisk fire. He gives the cutter sufficient time to soak to a clear, uniform, hardening heat, and when no part is visibly hotter than another it is dipped in a large water bath of 60° to 70° degrees, and moved slowly downward until hardened in the cutting parts. It is then taken out and quickly put over a keen fire prepared in advance, where it is turned for a moment to relieve the strain of the contracted rim upon the hot center, and then again dipped in the bath to prevent the teeth from drawing. This operation may be repeated several times according to the size of the cutter, the object being to relieve the strains and at the same time retain the hardness. The piece is finally plunged into hot water and left until water and steel are of the same temperature, when the temper may be drawn in the usual way. Mr. Shaw says he follows this method with all irregular and difficult shapes, and never loses them.

New Soft Polishing Wheel.—There has always been a demand for a very soft, pliable and smooth wheel for certain work requiring a fine polish. After extended experiments, C. E. LeMassena & Co. of Newark, N. J, have placed on the market a wheel which in its composition is free from any gritty substance, and is therefore not liable to scratch the work. It is made of fine sheepskin cemented with a soft compound which contains neither glue nor any other gritty substance, and it is stated to be smooth, pliable and soft. It is claimed that it will run true and outwear any other soft wheel.

The Prentiss Engine Lathe.

A standard engine lathe, embodying several new and important features, has been recently placed on the market by the Prentiss Tool and Supply Company of New York, for whom it is being made by the Pease Machine Tool Company of Worcester, Mass. Our engravings show one of the larger standard sizes, and in the two outline drawings are represented the principal modifications which have been here introduced. The aim throughout has been to produce a lathe of unusual weight and stiffness and provided with a driving gear, enabling it to take the largest cuts Further than this, in the manufacture of the lathe great care has been exercised to insure accuracy in order to enable the tool to turn out work of the finest description. The most important feature is found in the method of imparting feed motion to the carriage. This, as may be seen from the end view, Fig. 2, and also from the perspective, is accomplished by either one of two methods—by belt for light work or by gearing for heavier cuts.



THE PRENTISS ENGINE LATHE.

The lathe swings 30½ inches, has a bed 12 feet long and a distance between centers of 6 feet 2 inches. The length of the front bearing of the spindle is 7¼ inches and diameter 5 inches, the back bearing being 5¼ inches long and diameter 4 inches. The tailstock spindle has a diameter of 3½ inches. The lathe is driven by a five-step cone, 4½ inch face, and ranging in diameters from 8 to 19½ inches. It is heavily back geared and the speeds are graded uniformly from the slowest to the fastest. Change gears are provided to cut threads from 2 to 20. The carriage has a total length of 36 inches and carries a compound tool slide. Each lathe in this line is provided with a taper attachment, arranged to slide in a T-slot along the back of the bed and which can be removed the entire length of the bed by loosening two bolts. A good feature is introduced in the tailstock, which can be moved back and forth

by means of the crank handle shown at the right in the perspective view. All the boxes are of phosphor bronze, and ample provision has been made for lubrication. All actuating screws are made of special steel and the spindles are of high carbon steel thoroughly drawn under hammer to work free from seams. To insure accuracy in alignment in assembling the lathe all center holes are bored after the parts have been put in place, after which it is carefully inspected to ascertain if the work has been perfectly done. Referring to Figs. 2 and 3, it will be seen that the arm A carries the intermediate gear B driving the screw H. The cone E is arranged so as to drive by belt the cone D, which is so mounted on a lever arm, the handle of which is C, that it may be thrown out of gear, when the lathe will drive by the gearing, or may be thrown in, when the gearing will be disengaged and the lathe will be driven by the belt. This has been found to be of special advantage, as it permits of the almost instantaneous changing from geared feed to belt feed, according to the work being done. It will be observed that the lever arm F, carrying the cone and intermediate gear, is held by a binding screw, and to change from belt to gear feed requires simply to loosen the binding screw, which is made to fit poppet wrench, and swing the small intermediate gear into mesh with the gear on the lead screw back of the change gears. The handle C also serves as a tension for the feed belt, as by swinging the lower feed cone the belt can be made as tight as required, a feature that will be especially appreciated. The change gears are brought inside the feed cones close to the headstock, thus avoiding liability to spring under heavy cuts and insuring accuracy in screw cutting. Although designed for work of a very heavy character, all the parts can be easily manipulated, and the handles are all placed within convenient reach.

The New Wheeling Steel Company.

The proposed Wheeling Steel Company is rapidly assuming tangible shape. The certificate of incorporation was received last week. It authorizes a capital stock of $5,000,000, which is far in excess of the stock of any manufacturing concern in that portion of the country. The plant of the new company, existing at the present time, consists in part of three nail mills, a sheet mill, four blast furnaces and a steel plant, these industries being now owned by the corporations which are to be swallowed up in the new company. That other branches of the iron and steel business, such, for instance as the manufacture of structural iron and pipe, will be entered into, is reported to be but a question of a short time, and it is confidently hoped by those interested that a great impetus will be given to the local iron and steel trade, through the operations of the new company, and that there will be a corresponding benefit to both stockholders and workmen, to say nothing of the community at large. As is already well understood, the Wheeling Steel Company will be formed by a consolidation of the Wheeling Iron and Nail Company and the Belmont Nail Company—or rather, those companies so long existing in Wheeling will be wiped out of existence, the stockholders surrendering their stock and receiving in return stock in the new corporation, proportioned according to a valuation to be placed upon the present property by a commision of three gentlemen to be hereafter appointed. The present capital stock of the three mill companies and the steel plant is a little over $2,000,000, divided as follows: Benwood, $600,000; Belmont, $500,000; "Top" mill, $500,000, and the steel plant $450,000.

The Uses of Aluminum.—II.

In a recent issue of *The Iron Age* we reproduced that part of a lecture delivered by Capt A. E. Hunt of Pittsburgh before the Franklin Institute, which dealt with the cost of aluminum. We quote below from the same admirable paper on the use of the metal:

Electrical Conductivity.

Aluminum stands fourth, being preceded only by silver, copper and gold, as a conductor of heat as well as electricity. 1 yard of annealed aluminum wire of 98½ per cent. purity, 0.0325 inch diameter, at 14° C., having 0 05484 ohm resistance; a yard of pure copper wire having a resistance of 0.0315 under like conditions. The electrical conductivity of a standard section of pure silver being taken at 100, an equal section of copper also at 100, pure gold at 78 0, an equal section of pure annealed aluminum has an electrical conductivity of about 54.20.

Pure zinc	29.90
High brass	21.50
Pure tin	15.45
Soft 0.10 carbon open-hearth steel	12.00
Platinum	10.60
Lead	8 88
Nickel	7.89
Antimony	3.88

Authority, Lazare Weiller. Communication to the Société Internationale des Electriciens.

This relatively high electrical conductivity, when equal weights are taken, will undoubtedly prove a factor of importance in developing electrical uses for aluminum.

The electrical conductivity of aluminum is increased fully 5 per cent. by carefully annealing even the ordinary soft wire, and with hard-drawn wire the conductivity is increased by annealing nearly 10 per cent.

Pure aluminum has no polarity, and indeed the commercial metal in the market is practically non-magnetic.

Pure aluminum is very sonorous, and its tone seems to be improved by alloying with a small percentage of silver or titanium. For the sounding boards of musical instruments, aluminum has been proven to be well adapted.

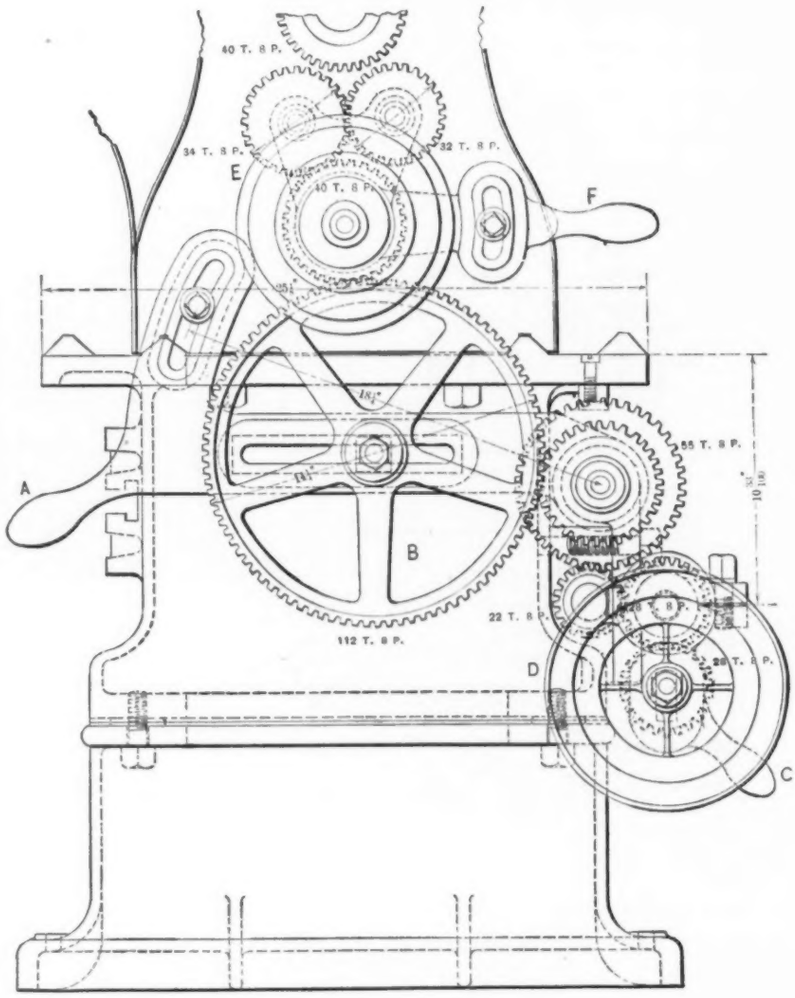


Fig. 2.—Elevation at Headstock End.

THE PRENTISS ENGINE LATHE.

Pure aluminum, when properly treated, is a very malleable and ductile metal. It can readily be rolled into sheets 0.0005 inch thick, or be beaten into leaf nearly as thin as gold leaf, or be drawn into the finest wire. Pure aluminum stands third in the order of malleability, being exceeded only by gold and silver, and in the order of ductility, seventh, being exceeded by gold, silver, platinum, iron, soft steel and copper. Both malleability and ductility are greatly impaired by the presence of the two common impurities, silicon and iron.

Aluminum can be rolled or hammered cold, but the metal is most malleable at, and should be heated to, between 350° and 400° F., for rolling or breaking down from the ingot to the best advantage. Like silver and gold, aluminum has to be frequently annealed, as it hardens up remarkably upon working. Due to this phenom-

enon of hardening during rolling, forging, stamping or drawing, the metal may be turned out very rigid in finished shape, so that it will answer excellently well for purposes where the annealed metal would be entirely too soft, or too weak, or lacking in rigidity to answer. Especially is this true with aluminum alloyed with a small percentage of titanium, copper or silicon. It can be safely stated, as a general rule, that under similar conditions the purer the aluminum the softer and less rigid it is.

Aluminum can be annealed by heating and allowing to cool gradually; the best temperature is just below the red heat. Thin sections can be annealed by heating in boiling water.

Aluminum can be easily and readily welded by the apparatus of the Thomson Electric Welding Company.

Until very lately the lack of methods for successfully soldering aluminum was among the greatest drawbacks to its introduction for many purposes. Thanks to your townsman, Mr. Jos. Richards, we have a cheap solder that works satisfactorily. The trouble with any solder is to get it to flow, for not only has the natural disinclination of most solders to spread over aluminum to be overcome, but also, due to its very high heat conductivity, the heat of the solder is withdrawn with such rapidity as to cause the solder to "freeze" before flowing sufficiently. This difficulty has been overcome in most cases by the use of a very hot soldering iron. In the most difficult places, the use of crystals of chloride of silver has been found to aid the flow of the solder. This use of chloride of silver for this purpose is subject to the United States patent, No. 375,875, of Messrs. Page and Anderson of Waterbury, Conn., their patent rights being for sale by W. H. Pierce, 37 Platt Building, Waterbury, Conn.

Aluminum Castings.

Sound castings of aluminum can be made in dry sand molds or in metal chills. As an evidence of this, I take pleasure in exhibiting a tea kettle cast from the metal by the Auburn Hollow Wax Company of Auburn, N. Y. It, however, requires some experience and expertness on the part of the founder to master the peculiarities of the metal, before perfectly sound castings can be uniformly made. The aluminum should not be heated very much beyond the melting point; otherwise it seems to absorb gases, which remain in the metal, preventing sound casting. In small quanties the metal can be best melted in plumbago crucibles, but in large quantities it can be more economically melted in a reverberatory furnace with alumina or magnesia brick sides and alumina bottom. The furnace should have a tap hole for drawing off the liquid metal into carbon-lined ladles. In no case need the metal be covered with a flux to assist in the fusion or to form a covering of slag. In fact, owing to the metal's lightness, the presence of any flux will tend to unsoundness, due to particles of it becoming entangled in the castings, while impurities may perhaps be added to the metal by the action of the flux on the lining of the melting vessel. The shrinkage of $\frac{1}{64}$ inch per foot, which aluminum has, is considerably more than that of brass, which is about $\frac{3}{32}$ inch per foot.

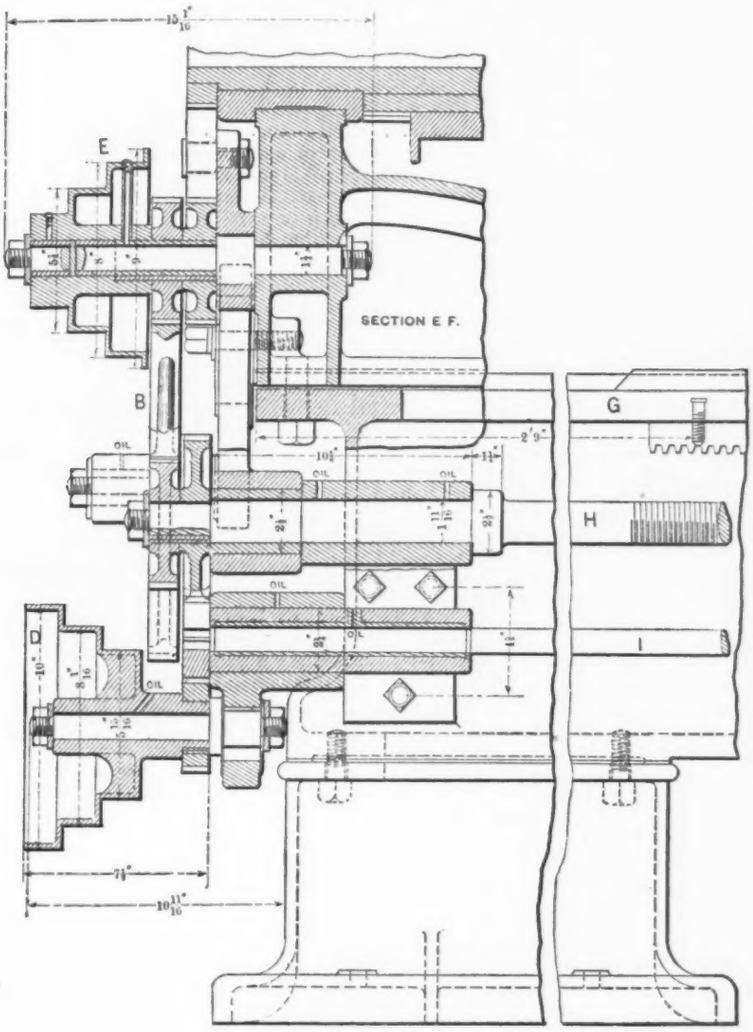


Fig. 3.—Vertical Section through Headstock.

THE PRENTISS ENGINE LATHE.

Aluminum Alloys.

Undoubtedly, one of the greatest uses for aluminum in the arts will be in the form of alloys with other metals. Aluminum in proportions of a small percentage added to very many different metals gives valuable properties. Among these alloys is, of course, aluminum bronze. The alloys of from 2½ per cent. to 12 per cent. aluminum with copper have so far achieved the greatest reputation. With the use of 8 per cent. to 12 per cent. aluminum in copper, we obtain one of the most dense, finest grained and strongest metals known, having remarkable ductility as compared with its tensile strength. A 10 per cent aluminum bronze can be made in forged bars with 100,000 pounds tensile strength, 60,000 pounds elastic limit, and with at least 10 per cent. elongation in 8 inches. An aluminum bronze can be made to fill a specification of even 130,000 pounds tensile strength and 5 per cent. elongation in 8 inches. Such bronzes have a specific gravity of about 7.50, and are of a light yellow color. For cylinders to withstand high pressures, such bronze is probably the best metal yet known.

The 5 to 7 per cent. aluminum bronzes have a specific gravity of 8.30 to 8, and are of a handsome yellow color, with a tensile strength of from 70,000 to 80,000 pounds per square inch, and an elastic limit of 40,000 pounds per square inch. It will probably be bronzes of this latter character that will be most used, and the fact that such bronzes can be rolled and hammered at a red heat with proper precautions will add greatly to their use. Metal of this character can be worked in almost every way that steel can, and has for its advantages its greater strength and ductility and greater power to withstand corrosion, besides its fine color. With the price of aluminum reduced only a very little from the present rates, there is a strong probability of aluminum bronze replacing brass very largely.

A small percentage of aluminum added to babbitt metal gives very superior results over the ordinary babbitt metal. It has been found that the influence of the aluminum upon the ordinary tin-antimony-copper babbitt is to very considerably increase the durability and wearing properties of the alloy. Under compressive strain, aluminum babbitt shows to be a little softer than the ordinary babbitt. A sample, 1½ inches diameter by 1½ inches high, began to lose shape at a pressure of 12,000 pounds. A similar sample of the same babbitt metal without the addition of the aluminum (having a composition of 7.3 per cent. antimony, 3 7 per cent. copper and 89 per cent. tin) did not begin to lose its shape until a compressive strain of 16,000 pounds had been applied. Both samples have stood about an equal strain of 35,000 pounds. In comparative tests of the ordinary babbitt metal and the aluminum babbitt metal, the latter has given very satisfactory results. At the works of A. W. Cadman & Co., 63 Water street, Pittsburgh, a crank pin bearing of a 30 horse-power engine with the ordinary babbitt metal required resetting about every three days; and after inserting in the bearing aluminum babbitt strips of about ¼ inch width upon the face, dovetailed in alternately in the brass bearing, the same bear-

ings ran under similar work for two months without requiring any attention; and when examined at the end of two months, the crank pin was found to have become very much smoother than it was before the aluminum-babbitt had been inserted. Mr. Cadman recommends dovetailing in the strips of babbitt, for the reason that it gives equal bearing all over the surface. Another advantage of this babbitt is its extreme malleability. It can be hammered out to a thin edge without cracking, whereas the ordinary babbitt is not at all malleable. An advantage of this is that for bearings, with aluminum, the babbitt can be rolled into shape for inserting in the dovetailed recesses, which can be cut and drifted out at a very small expense, and the amount of babbitt required is reduced to a minimum.

Aluminum in Steel Castings.

Aluminum is also being used very successfully in steel castings, and has added very considerably to the progress which has been made within the last two years in obtaining sound steel castings. A large number of steel-casting companies are regularly using the metal aluminum in quantities of from ½ pound to several pounds of aluminum to the ton of steel. In the manufacture of ordinary steel ingots by the open-hearth and Bessemer processes, it has lately been shown in the article on "Aluminum in Steel Ingots," by Prof. J. W. Langley, at the January, 1891, meeting of the American Institute of Mining Engineers, that the use of aluminum in small proportions (from ½ to ¾ pound of aluminum to the ton of steel) has proved to be an economical success, preventing blow holes and unsound tops of ingots.

Alloys of aluminum with copper in proportion of from 2 per cent. to 15 per cent. have been advantageously used to harden aluminum in cases where a more rigid metal is required than pure aluminum. Copper is one of the most common metals used at present to harden aluminum. A small percentage of copper decreases the shrinkage of the metal and gives alloys that are especially adapted for art castings. The remainder of the range, from 15 per cent. copper up to over 85 per cent., give crystalline and brittle alloys of no use in the arts, which are of a grayish-white color, up to 80 per cent. copper, where the distinctly yellow color of the copper begins to show itself.

With the exception of lead, antimony and mercury, aluminum unites readily with all metals; and many useful alloys of aluminum with other metals have been discovered within the last few years, and I prophesy that many more will be found within the next few years. I consider this field as one of the most promising for investigation of any of the "aluminum problems." The useful alloys of aluminum so far discovered are all in two groups, the one of aluminum with not over 15 per cent. of other metals, the other of metals containing not over 15 per cent. of aluminum; in the one case, the other metals imparting hardness and other useful qualities to the aluminum, and in the other the aluminum giving useful qualities to the other metals.

The alloy of a small percentage of silver with aluminum to harden, whiten and strengthen the metal, gives a metal especially adaptable for many fine instruments, tools and for electrical apparatus, where the work upon the product and its convenience are of more consequence than the increased price due to the addition of the silver. The silver lowers the melting point of aluminum and gives a metal susceptible of taking a fine polish and making fine castings.

Titanium and chromium can be readily alloyed with aluminum according to methods devised and patented by Prof. John W. Langley. This will probably prove to be the most valuable means of hardening aluminum; a small percentage of titanium rendering the metal, under work, very rigid and yet elastic at the same time. Chromium is the best metal for hardening aluminum castings; the triple alloy being best adapted where a very hard and yet elastic material is required.

More or less useful alloys have been made of aluminum with bismuth, nickel, cadmium, magnesium, manganese and tin, these alloys all being harder than pure aluminum. But it is by combinations of these metals, with additions, perhaps, of copper, lead and antimony, that alloys of most value have so far been discovered. Some are additions of only 1 per cent. to 2 per cent. of aluminum.

The modifications of pewter, britannia, white metal, delta metal and the like, with additions of aluminum, have shown very useful qualities and will add very considerably to the demand for aluminum in the near future.

The following alloys have recently been found useful: Nickel-aluminum, composed of 20 parts nickel and 8 parts aluminum, used for decorative purposes; rosine, composed of 40 parts nickel, 10 parts silver, 30 parts aluminum and 20 parts tin, for jewelers' work; sun bronze, composed of 60 parts cobalt (or 40 parts cobalt), 10 parts aluminum, 40 (or 30) parts copper; metalline, composed of 35 parts cobalt, 25 parts aluminum, 10 parts iron and 30 parts copper.

Besides these, Professor Emmens, the well-known inventor of Emmensite explosives, has great hopes for an alloy of aluminum-bronze and nickel for a gun metal.

Professor Robert Austin has discovered a beautiful alloy, containing 22 per cent. aluminum and 78 per cent. gold, having a rich purple color with ruby tints.

The addition of from 5 per cent. to 15 per cent. aluminum to type metal composed of 25 per cent. antimony and 75 per cent. lead, makes a metal giving sharper castings and a much more durable type.

To ordinary brass the addition of aluminum gives superior strength and better anti-corrosive qualities.

Some very marked and valuable qualities have been discovered in the use of aluminum and zinc for various purposes.

Aluminum in Galvanizing.

A mixture of aluminum with zinc is made by the Delaware Metal Refinery of Philadelphia, which has proved very useful in the galvanizing bath; adding 1 pound of the aluminized zinc alloy to each ton of spelter contained in the bath, and 1 pound of the alloy additional for each 1000 pounds of new spelter put into the bath. The effects are to make the spelter more fluid, coating smoothly 20 per cent. more surface than ordinary spelter, with a surface that is brighter, more malleable and will double-seam much better than ordinary galvanized iron. The use of aluminized zinc for this purpose is patented by Jos. Richards of Philadelphia.

The aluminized zinc has also been added to good advantage as an addition to ordinary brass mixtures; about 1 per cent. to the weight of the brass mixture of aluminized zinc being used, plunged with a pair of tongs under the surface of the metal, where it is stirred with a rod. The surface of the brass mixture is then skimmed, and after waiting about half a minute, until the bubbles of disengaged gas cease, poured as usual. The effects are to make sounder castings, increase the strength, and give a finer color to the metal, which will resist oxidation much longer than ordinary brass. Should the amount of iron in the brass mixture be high, as large an amount as 2 per cent. of aluminized zinc can be added to liquefy the iron. The use of aluminized zinc for brass alloys gives a heavier yield of metal than without its use; and the Delaware Metal Refinery people claim that the increased yield and sounder castings produced will much more than pay the slightly increased cost of the brass mixture by the addition of the aluminized zinc.

Aluminum has been successfully used to replace lithograpic stone.

Powdered aluminum mixed with chlorate of potash is used to give a photographic flash light, which gives much less smoke than the magnesium compounds used.

The Tacony Iron and Metal Company, another well-known Philadelphia concern, have successfully produced an aluminum ating for iron, which unoubtedly will have considerable use in the future.

To the inventors who shall produce good methods of nickel, silver and gold plating aluminum so that it can take the place of german and nickel silver, a rich reward is in waiting.

I have endeavored in the latter portion of this lecture to indicate a few of the uses that have already been established, and the openings that seem most prominent to my own observation for the use of aluminum. Undoubtedly, there are many other fields yet waiting for the metal which will yield rich returns to the successful investigator; and I close this lecture by again reiterating the prophecy that the financially most successful solution of the aluminum problems of the future "will be in the ways of utilizing the metal in the arts, rather than in devising more economical methods of manufacture."

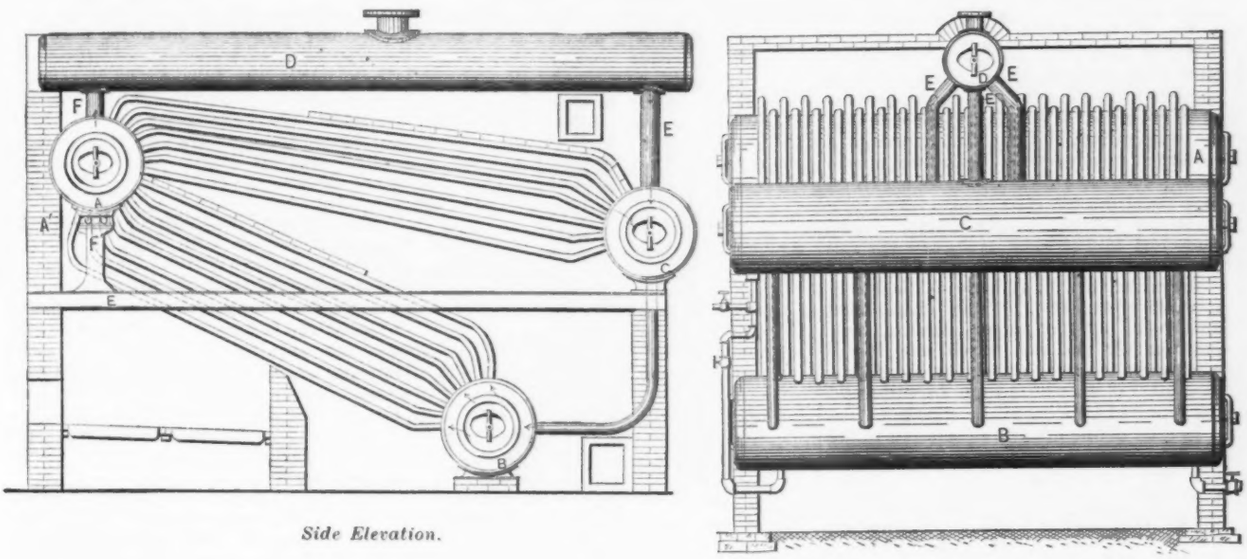
American Malleable Castings Abroad.

The following interesting item is taken from the London *Iron and Steel Trades Journal* for April 16:

In the Derby Court, on Monday, an action brought by Ley's Malleable Iron Company of Derby against Isaac Hill & Co., engineers, of the same place, was tried before his Honor Judge Kenelm Digby and a jury. The plaintiffs claim to be the only manufacturers of very high-class castings in the country, some of these being known as "black heart castings." For the purpose of producing these, they had imported from the United States very expensive plant, and they had secret methods for conducting their business which had enabled them to have a monopoly of that particular class of work in this country, and with great profit to themselves. They were not protected by any kind of patent, and therefore, it was stated, it was all the more necessary that they should be protected from trespassers who would like to imitate their work. Messrs. Hill & Co. had recently made an effort to establish a business for making malleable castings, and had taken into their employ a man named Ford, formerly in the employ of Ley's company. On Sunday, January 24, a man named Pegg was left in charge of Ley's works, with strict injunctions to maintain secrecy, and to allow no strangers to enter. The man Ford, however, accompanied by Mr. Hill, obtained access, it being alleged for the purpose of endeavoring to obtain a knowledge of trade secrets. Pegg was afterward invited to Hill's works, and questioned as to certain processes of Ley's manufacture, and an effort was made to get him in the employ of the Hill Company. The defense was that the visit was made openly, and there was no ground for the pretence that there was a desire on the part of Mr. Hill to obtain trade secrets. The jury gave a verdict for plaintiff for £10, with costs.

The Zell Steel Water-Tube Boiler.

The steel water-tube boiler here illustrated is the invention of R. R. Zell, and the patent has been assigned to the well-known boiler manufacturers, Campbell & Zell of Baltimore, Md. The object was to produce a water tube boiler simple in construction, efficient in operation and in which the circulation would be continuous. The boiler consists of three cylindrical water drums, A, B and C, arranged sidewise to the furnace. The drum B is connected to the drum A by means of the curved inclined tubes, and the drum A is connected with the drum C by means of the curved inclined tubes, as shown. The tubes are arranged in rows across the furnace and in each row are parallel to each other, and in each row are located above the spaces between the tubes in the row beneath, as shown in the rear elevation, thereby forming a staggered arrangement of the tubes, by means of which a large heating surface is exposed to the water in this drum descending by means of the pipes E, where it mixes with the feed water introduced into the drum C, and the circulation of the water continues in this manner around and through the various drums and tubes. The facilities for cleaning the boiler are excellent, as by the construction described the deposit takes place in the drum B, from which it can be easily cleaned out.



Side Elevation. *Rear Elevation.*

THE ZELL STEEL WATER-TUBE BOILER.

Laminations in Steel Fire Boxes.

One of the claims, says the *Railroad Gazette*, made for steel fire boxes at the time they were first introduced was that laminations, so common and so troublesome with iron fire box sheets, would be impossible. But in the light of experience the case is different, although many still believe that a lamination is impossible in a steel sheet. The new Baldwin compound built for the Master Mechanics' Committee affords a marked illustration of the truth in this matter. That engine was built of the best material, so far as could be learned, and every care was taken in its construction; yet during the recent trials on the Burlington road it had to be sent to the repair shops several times to have a patch in the fire box calked. The patch covered a lamination in the steel sheet. Blame for this does not rest with the locomotive builders, but solely with the plate makers. There is no known means of determining beyond question whether there is a lamination in a steel sheet or not. A lamination near the edge of a sheet may possibly be detected by etching the edge with acid, for then a lamination will show by a black mark; but if the fault be in the middle of the sheet, even a hammer test will not always show its presence. A hammer test is made by dividing the sheet off into small squares and hammering into each square separately, meantime listening to the sound and placing the fingers close to where the hammer strikes. If the lamination is such as to separate portions of the sheet, then the sound will be dull, and there will be a slight movement of the surface of the sheet, which can be distinguished by the touch at the time the hammer strikes.

Laminations are caused by several defects in manufacture. If the steel be poured in the ingot in such a way as to cause a "cold shut" or so as to permit air or gas bubbles to remain in what should be the solid part of the ingot, there will almost surely be laminations in the sheet when finished. If the top of the ingot be cut off too short, the defects present in that part of the ingot, such as bubbles and cinder, will almost surely cause laminations. The hammer process requires the utmost care. If the hammerer is careless and strikes the sheet unevenly, so that the hammer marks are not removed from the ingot, laminations are liable to result in sheets rolled from such improperly hammered ingots, as the edge of the hammer marks will roll over and form a film on the outside of the sheet. It may be stated almost as a self-evident proposition that if laminations do not exist when the sheet comes out of the rolls they will never occur afterward, even when the sheet is subjected to the severe heat of a locomotive fire box; so that the makers of steel sheets are directly responsible for laminations. These faults cannot be detected with any certainty by boiler makers.

As laminations give little or no trouble in a locomotive boiler, except in the fire box sheets, and as it is a question whether fire, which is broken up by the staggered arrangement of the tubes.

From the drum C several pipes extend downward to the drum B. The steam drum D is connected with the drums A and C by the pipes E and F. The furnace is of the ordinary construction. The arrangement of the deflectors, which serve to deflect the products of combustion around and between the tubes, in indicated in the side elevation. The drum A is placed upon rollers, so that the expansion and contraction of the various parts of the boiler are provided for without breaking or loosening any of the parts.

The operation of the boiler is thus described:

The feed water is introduced into the drum C by means of a pipe provided with a valve, and being heavier than the heated water to the boiler descends through the tubes in the lower drum B, which acts as a water leg and mud drum or separator. The tubes enter the sides of the drums radially, or at a line drawn through their centers. The circulation of the water will be across the drum B, as shown by the arrows, and upward through the inclined tubes into the water drum A, and from this drum the water can return either through the inclined tubes to the drum C to mix with the incoming feed water, or may ascend through the pipes F into the steam and water drum D, the a lamination necessarily decreases the strength of the sheet, it is only the fire box sheets that need to be specially examined for this defect. The annoyance and delay resulting from lamination costs more than the sheet which gives the trouble, and the mere replacing of a fire box sheet does not remunerate a railroad company for the loss resulting from a lamination. Take the case of this Baldwin engine. It has a radial stay fire box and it will probably be necessary to remove that box in order to replace the defective sheet, and the cost will be several times the original price paid for the sheet. The committee on tests of iron and steel appointed by the last Master Mechanics' convention has taken up the subject of laminations and will investigate it as fully as possible; but so far no method of determining whether a sheet is laminated has been found.

Complaint is made of the quality of the Indian lands recently opened to settlers in Oklahoma, and thousands who fought to obtain possession are now moving away. Twenty thousand people have secured farms, and a half score towns with populations ranging from 2000 to 5000 have sprung into existence. Altogether the population of the new country is estimated at 57,000 people, nearly double the number which it was expected would colonize in the lands.

Causes of Rail Breakages.

BY W. R. HINSDALE.

In a recent number of a New York daily paper there appeared an article having as caption, "The Broken Rail." The article was principally a report of interviews with prominent railroad managers, and the wrecks due to broken rails were generally set down by them as in the list of unavoidable accidents.

President Chas. P. Clark of the New Haven Railroad is quoted as saying: "The only railroad accidents that can strictly be called unavoidable are those which result from the fracture of metals. The accidents which are caused by the breaking of metals furnish the most fruitful subject for discussion under the head of unavoidable accidents. On our road all rails are tested, but some hidden flaw may escape attention, and the rail give out at a critical moment. The purpose of a railroad official may be all right, but he needs the technical knowledge which enables him to see where opportunities for improvement exist."

Walter Katte, the chief engineer of the New York Central, said: "We make a point of inspecting the steel rails made for us at the mills. We find their exact chemical composition, and put them through a variety of physical tests before we accept them; even then there are flaws which escape the strictest scrutiny that human foresight can invent. A great strain might come just at the weak spot, and the rail give way."

President Geo. B. Roberts of the Pennsylvania road says: "The metal used must be of just the proper chemical composition. If the rail is too soft, it will wear away too fast, but at the same time it must be ductile enough to withstand the repeated impacts of the wheels."

In each of the interviews referred to the officials express an honest desire to do the best they can for the safety of the public, to say nothing of the pecuniary aspect in the interest of their respective roads, and no one can doubt their honesty of purpose. There is, however, among railroad officials a great misapprehension as to the varying qualities of steel, and the slight causes during the course of manufacture that will seriously affect the final result.

When the gentlemen referred to above say that they inspect and test all their rails, they do not really mean anything of the kind. They do not mean that each individual rail is subjected to a rigid physical test, but that each individual rail has been merely looked at and that comparatively few of them have been subjected to any other test whatever, and if the finished rail has a presentable exterior, it is passed regardless of the hidden flaws it may contain. I do not contend that more than this can be done under the methods of inspection generally pursued by railroad officials, or that the inspector's eye should see the invisible, but that the inspection should begin at an earlier stage of the manufacture, where the flaws resulting from the methods of manufacture may be easily discerned.

As described by President Roberts of the Pennsylvania road, a proper degree of ductility, combined with suitable hardness, are the general requirements as to quality of the steel. These cover tensile and compressive resistance, and excessive loss by abrasion, and these qualities being assured, if the rail is absolutely sound, and of correct section, it would seem that little more can be required of the manufacturer. But the question of soundness in the finished rail not being easily determined, without spoiling it as a rail, the necessity for an improved method of inspection on behalf of the railroads is obvious, and a practical knowledge of the art of manufacturing steel would undoubtedly be desirable on the part of the inspectors.

Fig. 1 represents the general appearance of a rail ingot when removed from the mold. All ingots of steel are subject to a variety of defects, one of two conditions and sometimes both may always be found in every ingot. Either a shrinkage cavity or "pipe" at the top, extending downward in its vertical axis from 15 to 25 per cent. of the total length of the ingot, or in place of this a spongy texture indicative of a poorer quality of steel, although made from equally good materials.

To go into details of the causes which produce such different results is beyond the purpose of this paper, although they are generally fairly understood by the skillful steel maker.

The sound portion of the piped ingot is generally free from seams and cracks and produces the best results in manufacture, while the ingot of spongy texture is quite

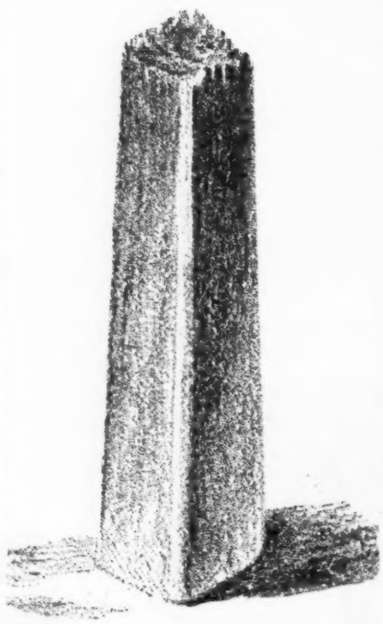


Fig. 1.—Rail Ingot.

certain to develop seams and cracks in working and to be of doubtful utility when finished, and in the higher grades of steel is always rejected for first-class work. A too hasty exposure to the air by stripping the mold from the ingot while its interior is still at its fullest, expansive heat, often induces exterior cracks both transverse and longitudinal which never weld in the subsequent working and always result in great injury to the product.

President Roberts says that "the metal must be of just the proper chemical composition," and yet rails having "just the proper chemical composition" have proven so brittle that they would not bear unloading in the usual manner from the cars, but would break like pipe stems. A lot of 2000 or 3000 tons was made not much more than two years ago, which were as above described, and all were condemned and returned to the manufacturer. In this case the analyses of the iron as well as the steel were all that could be desired. Such incidents should serve to set aside as worthless the knowledge of the "exact chemical composition" of the rails to the railroad manager and should relegate the whole matter to some person in the interest of the railroads capable of knowing how to treat ordinary Bessemer iron, and this conclusion should be further apparent to railroad managers when they consider the very satisfactory analyses their own laboratories make from rails broken in service.

A carbon analysis from each heat, representing one from each 60 rails; a manganese determination from each tenth heat, say one from each 600 rails, and a quantitative analysis from each fiftieth heat, say a full analysis of 60 out of every 3000 rails, measure the very dull light thrown on the chemical characteristics of the output of our large rail mills.

Inspection is not aided in the least by such insignificant data, and it only serves to further befog the question and confound all who attempt to prove anything by it. When nature formed the laws that govern making steel, she gave them sufficient elasticity to stretch over a wide range of so called "practice," with the result that between a bloom that would make a first-class rail and one that would just pull through by "the skin of its teeth," there is a broad field for neglect of proper manipulation and sacrifices of quality for "large output;" and yet all heats that make first-class rails are as easily and quickly made as the poorer kind if the "technique" of the establishment is of the masterly kind that such immense operations justify in obtaining. In this connection the statement of President Clark, "that the purpose of a railroad official may be all right, but he needs the technical knowledge which enables him to see where opportunities for improvement exist," may be criticised; for, as in all other important affairs, President Clark should employ such technical knowledge.

A knowledge that only comes by long practice, coupled with sufficient intelligence to comprehend the phenomena of manufacture which are constantly passing right under both the physical and mental noses of the Bessemer man, are the qualifications required to protect, in some measure more than at present, the railroad companies against rails of doubtful qualities, and such persons will be employed just as soon as railroad managers acquire enough "technical knowledge" to see the importance of it.

No reputable rail makers would object to a respectful supervision of their metallurgical operations by a well-qualified representative of a leading railroad, nor hesitate to correct indifferent practice in their works when such qualified person could show that it would be beneficial, and such inspection and suggestion need not embarrass operations nor increase cost. A little sound knowledge, at the right moment in the right place, is just what such inspection would comprehend.

In the interview with Walter Katte of the New York Central road, he says: "We find the exact chemical composition of the rails." As will have been observed from the foregoing, it does not follow that this knowledge gives the railroad official any definite information as to the quality of his rails. The proportion of carbon will give him a general idea as to their hardness, but "the exact chemical combinations" should be left to a competent inspector and the manufacturer, and with more attention paid to the physical conditions developed during the working of the steel, he will soon learn that there is as much difference between the product of a sound bloom and one that is cracked and full of seams as there is between clear and straight-grained oak and knotty and twisted hemlock. To be sure, both blooms are steel, and so are both the others timber, and the comparison is fair.

Undoubtedly the best point of observation for determining the quality of the future rail is at the blooming mill, and it does not require a technical knowlege of steel manufacture to see the external defects of the future rail fully exhibited in the bloom. Specifications should therefore include inspection of the blooms, and the rejection of such as show defects in

rolling. It is not unusual to see blooms develop in rolling many irregular transverse surface cracks, while under the powerful action of the finishing rolls these cracks are reduced in size with the reduction of the bloom, and by the oxidizing effect of the air are obscured from ordinary observation, but they still exist in the rail in no less proportion than they existed before in the bloom, and the integrity of the rail is thereby impaired. The remedy for this condition of the bloom rests with the manufacturer, and as President Clark intimates, the railroad manager may not have the technical knowledge required to suggest the remedy, he may reasonably content himself by insisting that a remedy shall be applied. The transverse cracks occur at various points along the surface and often extend an inch or more beneath. Exposure to the air quickly produces an oxidized surface or scale covering the walls of the cracks, which effectually prevents their welding in the subsequent working, and although attenuated in the process of reduction in the finishing rolls, the cracks before plainly visible in the bloom are still present in the rail, and these incipient breaks invite disaster under any unusual stress, and not infrequently these cracks are enlarged to the point of failure by the vibrations due to passing trains. It is true that some of the worst blooms are subjected to a process of trimming which consists in gouging out a portion of steel on each side of some of the larger cracks, but this is only a partial remedy at best, and often induces other faults in the surface of the rail.

It is therefore a reasonable conclusion that it is hazardous to use a bloom that requires this surface trimming, as it indicates a general condition of the steel which unfits it for No. 1 rails, and all such blooms should be rejected.

The manufacturer will say that this trimming process is performed to improve the quality of his "seconds," but that large numbers of such blooms are passed by the inspectors as No. 1 rails will be only too obvious by an hour of observation at the blooming mill. Some portion of these defects may be due to lack of care in blowing the heats, and a too hasty manipulation in not permitting the chemical reaction to take place in the converter, but continuing it in the molds after pouring.

With some manufacturers this slow reaction within the mold is purposely induced, to the palpable injury of the product, by reducing the percentage of manganese. This is a prolific cause of cracks in the blooms.

The reduction in percentage of manganese and the consequent slow reaction in the mold also frequently causes the molten steel to rise 10 or 12 inches in the mold during its cooling, and results in a spongy texture of the ingot, with a shrinkage cavity commencing at about one-fifth the length of the ingot from the top. As the shrinkage takes place and the cavity enlarges a vacuum therein would be the result, but that soon the pressure of the atmosphere ruptures the soft spongy steel, and the air passing into the cavity causes the formation of scale on the walls, which prevents their welding together in the rolling, and thus the phenomena of piped rails having apparently sound ends result.

Fig. 2 was reproduced from a photograph of an ingot broken to show the conditions above described. Fig. 3 is from a photograph of a broken ingot showing no sponginess at the top, but with a sound surface, and by removal of the piped portion would have produced rails of an excellent quality. Fig. 4 shows a section of rail long in use, made from the sound portion of an ingot. Fig. 5 was taken from a section of rail made from the upper or piped end of an ingot, and shows that the use of such is hazardous. Fig. 6 was taken from a section of rail which broke in service, causing a wreck. No. 7 illustrates the appearance of a bloom having a perfect exterior. Nos. 8, 9 and 10 illustrate the appearance of an imperfect bloom before and after the trimming process above mentioned.

The United States Government specifications require 35 per cent. of every ingot destined for Government work to be rejected and removed from the top, and the railroad managers of to-day should not be satisfied with a less careful inspection of such important materials as their rails. Hunt's specifications for rails require 12 per cent. to be removed from the top of the ingot, but this was doubtless a compromise, as Mr. Hunt and the manufacturers understand that 20 per cent. would be nearer the safety mark. Mr. Hunt's moderate requirements not being complied with, anything that will pass the cursory examination of the inspector, after the rail is finished, is accepted as sound. Heavier rails are being rapidly substituted for the old and lighter models, but this will not prove to be a sufficient safeguard against breakage unless the quality shall be improved, and while this substitution is going on, it will be a great pity and source of lasting evil if the old methods of determining their quality is not improved upon, when we consider that the size of the defects will continue to be in proportion to the size of the rails.

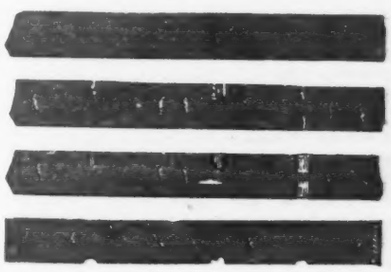
Fig. 2.—Broken Ingot.

Fig. 4.—Rail from Sound Portion of Ingot.

Fig. 6.—Section of Rail which Broke in Service.

Fig. 3.—Broken Ingot.

Fig. 5.—Section of Rail from Piped End of Ingot.



Figs. 7 to 10.—Perfect and Imperfect Blooms.

CAUSES OF RAIL BREAKAGES.

The new rapid process of rolling and finishing direct without reheating the blooms is quite likely to increase the existing evils on account of the lower and uneven temperatures at which the blooms will arrive at the finishing rolls.

"They are getting as good as they pay for" has been heard more than once from the lips of a manufacturer while admitting that he could make better rails, and this remark, doubtless, indicates the direction competition has turned the thoughts of manufacturers, but inspectors with technical knowledge and long experience in the manufacture of rails can fairly arbitrate matters of divided responsibility between the railroads and the rail makers as to the quality of rails that shall be laid in American tracks, and when railroad officials confront the long list of killed and maimed in broken rail wrecks, they must feel a personal responsibility if they neglect any safeguards from mere pecuniary considerations.

Broken rail wrecks should not carry with them the verdict of "Nobody to blame," for the connection cannot be sustained that all such are unavoidable.

The Leechburg Bar Shear.

The accompanying cuts show side elevation and plan of a bar shear of new design which the Leechburg Foundry and Machine Company of Pittsburgh are putting on the market. The shear is designed for cutting steel sheet bars up to 1 inch thick and 7 inches wide, but it is claimed it will cut with safety large sizes. It differs from the ordinary bar shear in several points which are absolutely necessary to make a clean, square cut, and which is required in sheet bars for making tin plates. First the shear is very heavy in all parts and the cross section of the lever and bed is in the shape of an eye beam, thus giving the greatest resistance for the same weight. The guide for the lever is separate from the bed and is adjustable by two key and set bolts. By this means the knife blades can always be kept in perfect adjustment, which is necessary, as stated above, in order to make a clean, square cut. The cam is constructed according to the rules of Archimedes spiral, and the highest point is reached in about two-thirds of a revolution of the cam. This gives the engine and gear much greater power than when the cut is made in a half revolution, as is the case in the ordinary cam. The bed which extends to receive the engine and pillow blocks is of a heavy girder pattern and gives a rigid connection between the engine and shear. The Leechburg Foundry and Machine Company have received orders for several of these shears, and at present are building one to be placed in the new works of the Blairsville Rolling Mill and Tin Plate Company, now being built at Blairsville, Pa.

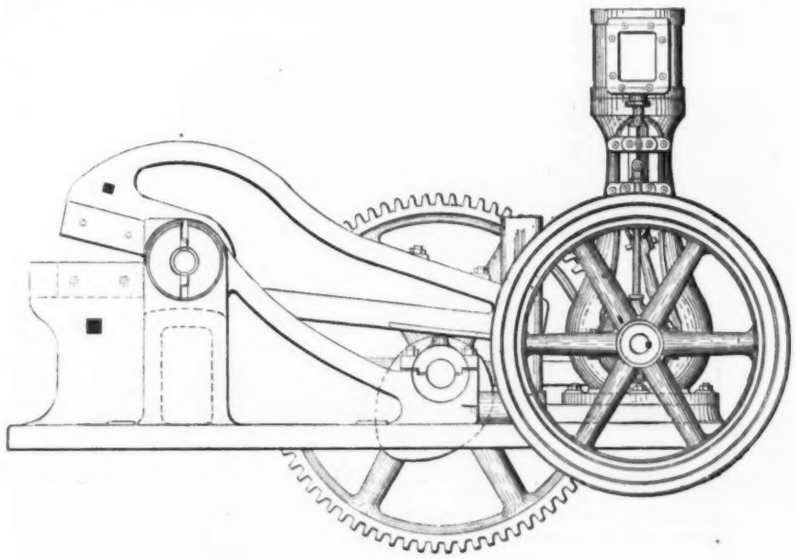


Fig. 1.—Side Elevation.

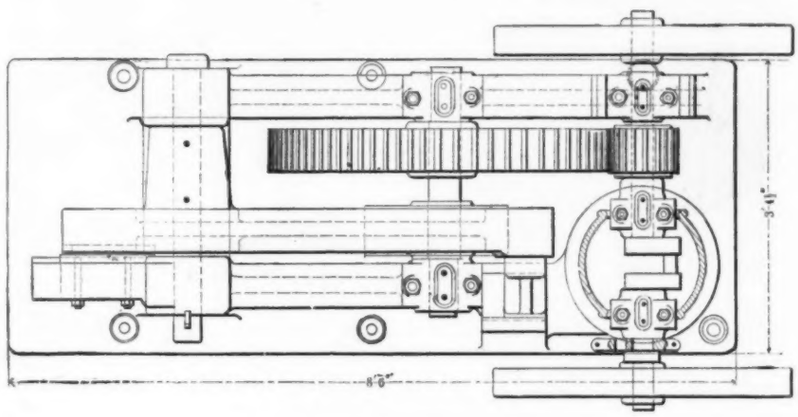


Fig. 2.—Plan.

THE LEECHBURG BAR SHEAR.

Western Freight Rates.—A meeting of the freight agents of Pittsburgh, Cleveland, Youngstown and Wheeling, representing the various roads entering those cities, was held in Cleveland, Ohio, last week. The object of the meeting was to consider an application from Wheeling lines for the same rates on pig iron and iron articles from the Wheeling district to certain Western points as govern shipments from the Mahoning and Shenango valleys. The Wheeling Committee decided to recommend to the Central Traffic Association that the Wheeling roads be permitted to make the same rates on iron as from the Mahoning and Shenango valleys to points east and south of the line of the Big Four Railway from Galion, Ohio, to Indianapolis, Ind., and to points on and east of the Jeffersonville, Madison and Indianapolis Railroad south of Indianapolis to Louisville, Ky., to points north and west of the lines indicated. The Wheeling Committee decided to recommended a rate of 1 cent per 100 pounds, or 20 cents per ton, higher than from the Mahoning and Shenango valleys, subject to such modifications as may be required. No further action will be taken on this matter until the next regular meeting of the Central Traffic Association, which will be held in Chicago on May 10 next.

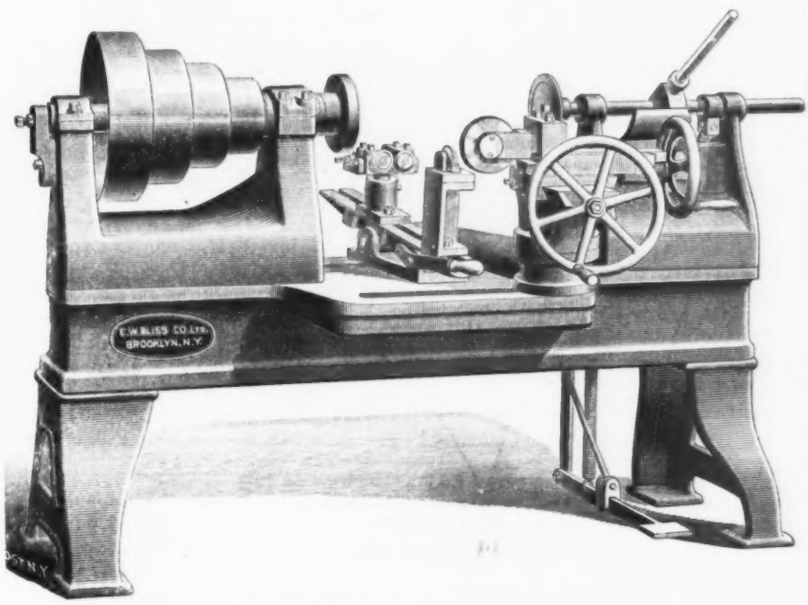
Carbo-Alumina.—The Stark Concentric Lock Company, St. Louis, Mo., have recently perfected and placed on the market a new metal to be known as Carbo-Alumina. This metal is stated by the company to have specially valuable properties. It is claimed to be stronger than brass, has great elastic strength, and has stood the test of 80,000 pounds to the square inch. It has a close, fine grain, with a fracture like steel. It is also lighter than brass and can be worked at a dull red heat, and be readily drawn out. It is particularly adapted for car trimmings and locomotive castings, where great strength is required. It is pretty generally understood that metals of this character cannot be colored. This company, however, have succeeded in imparting to this metal a peculiar hazy, bluish tint, which is decidedly handsome. While the metal has only been on the market a few months, the sales have been large, and the company are making preparations to increase their plant, so as to be in position to meet the growing demand.

Bethlehem Barbettes.—At the Bethlehem Iron Works last week the two armor plate barbettes made for the war ship Monterey, now being built at San Francisco, were passed by the Government inspectors. They are said to be the finest jobs ever turned out by the Bethlehem Iron Company. The fore barbette consists of five 11½-inch armor plates, so curved by the big hydraulic bending press that they make a perfect circle 80 feet in circumference. The aft barbette is similarly constructed, of 13-inch plates, and is 90 feet in circumference. Commodore Folger of Washington, Chief of the Bureau of Ordnance, who inspected these marvels of workmanship, said they were the most perfect turret barbettes ever constructed either in Europe or America. When placed on the Monterey's deck the guns will be placed inside.

The total population of New York State, according to the census just completed, foots up 6,510,162, against 5,997,853 as shown by the Federal census taken two years ago. One fact disclosed is the large number of aliens in our principal cities, numbering 377,000 in New York and 126,000 in Brooklyn.

Spinning Lathe for Sheet-Metal Work.

The E. W. Bliss Company (Limited) of Brooklyn, N. Y., have redesigned their spinning lathes, as shown by the annexed cut. The change has been mainly in the direction of strengthening the parts, broadening and lengthening the wearing surfaces and increasing the size of the bearings. These lathes are for spinning, burnishing, trimming and wiring such work as is produced by the drawing presses, where such spinning is necessary. They are also used for hand spinning from the flat, and when intended for that purpose a T-rest is provided, instead of the compound rest. The lathes are built with hammered steel spindles, bronze metal boxes and heavy compound slide rests. They are supplied either right or left handed, as desired, and for either outside or inside spinning. Iron cones are supplied unless wood cones are desired. The hardened steel burnishing roll is provided with anti-friction bearings to prevent heating. By use of the tilting rest all but the largest articles can be spun, trimmed and wired at one setting. These lathes are made in three sizes weighing 850, 1200 and 3000 pounds respectively.



SPINNING LATHE FOR SHEET-METAL WORK.

North Bros. Mfg. Company.

In our last week's issue we alluded to a circular to the trade mentioning the purchase by North Bros. Mfg. Company, Philadelphia, of the business and plant of the American Machine Company from the syndicate of judgment creditors who carried on the company's business after its insolvency. North Bros. Mfg. Company are well known as iron and brass founders, having been specially and very successfully engaged for many years in the production of a fine grade of soft, light, gray castings; also some hardware specialties, as the Weed faucet, and a few other articles, as well as making fine brass castings.

The hardware specialties of the American Machine Company are well known to the trade, and comprise the Gem, American, Blizzard and other styles ice cream freezers, ice chippers, ice shaves, Perfection meat cutters, fluting machines, tobacco cutters and shavers, and some others. The business is a very extended one, covering all parts of the United States and Canada, and also a very large and constantly increasing exporting trade in many parts of the world. In combining the two plants under one management the North Bros. Mfg. Company enjoy exceptional facilities for increasing trade in both their foundry and manufacturing departments.

The capital stock of the company has been increased to $100,000, paid in. The officers of the company are S. G. North, president, R. H. North, treasurer, A. C. Albrecht, secretary, and with a board of directors of active, practical and experienced business men their success may be regarded as already assured. The company are now actively engaged in filling orders. The foundry department is located at the northwest corner Twenty-third and Race streets, and the manufacturing department at the northeast corner Lehigh avenue and American street, Philadelphia. The main office is located at the latter address, and all correspondence should be addressed there. Both the foundry and manufacturing departments are equipped with the latest improvements of every kind, and have every facility for carrying on business in a manner to produce goods of a superior quality at reasonable prices. They are prepared to extend their line of goods, and will be glad to consider the manufacture of any new goods presented to them, and also fine castings of either gray iron or brass.

The Crescent Steel Company have issued a circular under the name of "Sparks from the Crescent Anvil." A notice at the head of the circular states that it is published at irregular dates by the sales department of the company, and that A. L. Butler of Chicago is its editor and P. H. Patriarche of New York is associate editor. It consists of four pages of practical articles in connection with the treatment of steel, interspersed with brief paragraphs of much pith and point on miscellaneous matters.

The Hong Kong and Shanghai Banking Corporation, who have a branch in Wall street, have lost about $500,000 through the defalcations of their comprador, whose father served in that capacity 22 years. The bank was calling in several of its large loans to native banks, in consequence of the depreciation of silver, and it is supposed that their securities proved to be bad.

WORLD'S FAIR NOTES.

Swift Delivery of Mail.

An important meeting of Post Office officials was held in Postmaster Sexton's office, in Chicago, last week, to discuss the means of transportation of the mails to the World's Fair Post Office. There were present Colonel S. A. Whitfield, First Assistant Postmaster-General; A. D. Hazen, Third Assistant Postmaster-General, and all the heads of departments in the Chicago office. How to get the mails from the main office to the fair grounds in the shortest time was the subject under discussion. A proposition from the National Pneumatic Tube Company to build a pneumatic-tube line from the Post Office to the World's Fair grounds received serious consideration. The company propose to build an underground pneumatic line from the Post Office east on Jackson street to the alley between Michigan avenue and Wabash avenue, north on the alley to Randolph street, and thence to the Illinois Central tracks, along which the tubes would be laid to the fair grounds.

In running through the alley between Michigan and Wabash avenues the wholesale houses along those thoroughfares could be tapped and packages of reasonable size sent with lightning rapidity to the fair grounds. The tube, it is proposed, will be over a foot in diameter. Maps of the proposed route and pamphlets explaining the workings of the scheme were placed in the hands of those who attended the meeting. It was claimed that packages could be sent from downtown to the fair grounds in a minute and a half. The scheme is said to have the unqualified indorsement of all those who attended the meeting. General Whitfield and Mr. Hazen will report the result of their investigations to Postmaster-General Wanamaker. If the proposed system is built a contract will probably be made with the Government to carry all the mails from the main post office to the fair grounds. The cost, it is said, would be less than one-half that of the present methods.

Lake Passenger Transportation.

One of the most important concessions yet granted by directors of the World's Fair was practically completed last week. It was the concession for a monopoly of the steamboat business to the fair between all points on Lake Michigan from Kenosha, Wis., on the north, to Michigan City, Ind., on the south. Lake captains in a hundred ports have been eagerly watching the outcome of the struggle for this concession. All of them expected to reap a rich harvest by going to Chicago during the fair and operating vagrant lines of excursion steamers, with Jackson Park as their objective point, but the Lehigh Valley Transportation Company secured the contract. It will have an absolute monopoly of all lake transportation to the fair between the points named.

This company are backed by R. L. Henry, John D. Rockefeller, T. T. Mulford, Western agent of the Union Steamboat Company, Hugh McMillen, general agent of the Western Transit Company; Melville E. Stone, the banker; J. Harley Bradley and the American Steel Barge Company, otherwise Colgate Hoyt. The company have contracted to haul as many people to Jackson Park by water route as the necessities of the exposition may require. They will begin business with enough vessels to take from 30,000 to 75,000 people a day to the grounds. If those facilities are inadequate the fleet will be increased. A single vessel of the whaleback pattern will haul 5000 passengers each trip. This will be the biggest boat

of the fleet, although a number of them will carry 3500 passengers each.

According to the agreement the Lehigh Valley Transportation Company will be allowed to charge passengers 25 cents for a round trip to Jackson Park from the Van Buren street docks. Arrangements have already been made by which the boats will run up the Chicago River to the Twelfth street docks, taking up passengers at the Northwestern, Union and Grand Central passenger stations. An additional charge of 5 cents will be made for passengers taken aboard at these river points. Boats coming from Kenosha will stop for passengers at Waukegan, Evanston, Lincoln Park and Van Buren street. Vessels bound from Michigan City will stop for passengers at South Chicago and Hammond.

During the fair some of the big boats pressed into service by this company will be converted into floating hotels, sleeping accommodations being provided for hundreds of passengers. The boats will lie in harbors near Chicago, and land their guests at Jackson Park early in the morning before heavy travel begins.

Proposed Pageant on the Lakes.

In addition to the proposed naval review in New York harbor and Hampton Roads, for which the Naval Committee of the Senate have agreed to recommend an appropriation of $300,000 in the Naval Appropriation bill, it has been suggested by Representative Vincent Taylor of Cleveland that a grand review of the merchant marine of the great lakes be held while the caravel Pinta is on her way through the Welland Canal and the lakes to Chicago. Colonel Anderson, who is in charge of the naval review scheme in the East, has assured Mr. Taylor that of 100 yachts which are expected to take part in the review on the Atlantic a great majority will be taken by their owners through the St. Lawrence and the lakes to the World's Fair. The plan is to have the caravel and the yachts meet at the head of the Welland Canal, and that a concourse of the shipping of the unsalted seas shall move on to Chicago together, probably visiting Buffalo, Cleveland, Toledo and other points *en route*, as well as Detroit, with banquets and ceremonies all along the line. Mr. Taylor thinks that at least 100 and possibly 200 lake craft will join the gala procession and give the world such an object lesson in the importance and magnitude of the shipping of the interior waters of America as it has never had before. No appropriation is wanted for the lake end of the review, as the ship owners will send their craft out of public spirit and local Boards of Trade and citizens will, at their own expense, provide the necessary ceremonies and banquets.

Mushroom Rapidity.

All records for the swift construction of World's Fair buildings have been broken on the structure that will serve Chief Burnham and his assistants as permanent headquarters after May 1. A substantial building, 200 by 310, two stories, will be finished in just 28 days. It has been a race against time and an unsympathetic landlord from the start. The force of men under Chief Burnham now occupies a suite of rooms in the Rookery that cost the Exposition Company about $10,000 a year. A brigade of engineers, expert draftsmen, accountants and other assistants occupy these rooms. Leases expire May 1 and the managers of the Rookery are stern landlords. Leases must either be renewed or forfeited on May 1 of each year. On April 1 the Construction Department got bids for the office building at Jackson Park. The contractors ordered their material on April 2. Then the race began. Night and day the work was crowded forward. "Do you want these rooms another year?" the agent of the Rookery asked. "They will be at your service after April 30," E. R. Graham replied. Mr. Graham is Chief Burnham's first assistant Every day members of the Grounds and Buildings Committee asked Mr. Graham how the work was going on. "We will be ready to move April 30," he invariably replied. From time to time the force was increased. Carse & Son, who are doing the carpentry work, urged their men on with all sorts of promises. Smith, Crimp & Eastman, the staff makers, broke all records on exterior covering. The building spread and grew like a bad weed in a farmer's field. Now its completion is assured, and all of Mr. Burnham's assistants will move into it this week.

Professor Barrett to Resign.

Prof. John P. Barrett, Chief of the Department of Electricity of the World's Fair and superintendent of the fire and police alarm service of Chicago, may resign both positions soon. The National Association of Underwriters want him to take charge of a new department about to be established, the inspection of electric lighting apparatus in all the big cities of the country. Professor Barrett was indorsed for chief of the World's Fair Department of Electricity by all the manufacturers of electrical apparatus in the country. Since the department was organized he has received the most cordial assistance from electricians in this country and in Europe. In a building much too small for their demands, although many times larger than the space devoted to electrical apparatus at the Paris Exposition, he has managed to satisfy all the applicants for space and has laid the foundations for the greatest display of electrical apparatus ever made. Professor Barrett will complete the thirtieth year of his service to the city of Chicago June 2.

Cincinnati to be Represented.

At the Cincinnati Chamber of Commerce, on the 22d, was held a meeting of the Joint Committee of the Chamber of Commerce, Board of Trade and Transporting Builders' Exchange, Commercial Club, Merchants' and Manufacturers' Association and the Receivers' and Shippers' Association to take action toward a proper exhibit by Cincinnati merchants and manufacturers at the Columbian Exposition. Ex-Secretary of State Daniel J. Ryan and W. W. Peabody, Ohio commissioners, were present to represent the Executive Board of the World's Fair. Mr. Sextro, the extensive furniture manufacturer, stated that nearly all the furniture manufacturers of Cincinnati would make exhibits, and Mr. Ryan told the committee that the outlook was fine for the largest display of carriages and buggies ever seen at an exhibition. L. N. Benham, treasurer of Ohio board and chairman of the Executive Committee of the World's Fair, stated that bids for the construction of the Ohio Building would be opened this week. The estimated cost of the building will be about $25,000, and the Legislature has appropriated $60,000 for all State purposes.

The Legislature of Ohio has further appropriated $25,000 for a monument typifying the greatness of that State. The monument, executed in bronze, will be 17 feet high. It will be put up in front of the Ohio Building and after the fair removed to Columbus and erected in front of the capitol. Life sized figures of Grant, Sherman, Sheridan, Chase, Stanton and other sons of Ohio will be grouped around the granite shaft. Cornelia, pointing to the inscription, "There are my jewels," will stand on a pedestal above the group. Levy T. Schofield of Cleveland designed the shaft.

Items.

The Rensselaer Polytechnic Institute of Troy, N. Y., will have a fine exhibit at the World's Fair. The alumni have been requested to send to the institute a record of the work accomplished by them since their graduation. The books written by them, as well as their inventions, will be collected; maps will be prepared to show in what parts of the world the graduates of the institute have built bridges and railroads, or been engaged in other engineering work. At the Paris Exposition the institute was awarded a grand prize.

Lieutenant A. C. Baker, who is in charge of the marine section of the Department of Transportation, has returned from an extended trip and is confident that the display will be a large and thorough one. He has received many assurances of cordial co-operation from ship owners and builders on the great lakes and the seaboard. The big international lines will show models of their boats.

The California World's Fair Board has appropriated $15,000 for the employment of assistants to collect and arrange a mineral exhibit for the fair and has appointed Commissioner McMurray superintendent of the mineral display.

Director-General Davis has decided to make another demand for a separate building for the Department of Liberal Arts, which, according to present plans, must be cared for in the Manufactures Building. He will ask for a building 500 by 800 feet, south of the annex to the Transportation Building.

The Jamaica Legislature has increased the grant for the Columbian Exposition from $10,000 to $25,000.

The gas companies have accepted the site for their building for a special exhibit and will go to work soon on the building.

Bids for constructing the peristyle, casino and music hall at the southeast corner of the exposition grounds aggregate $279,730, as follows: Piling, Hiero B. Herr & Co., $18,995; carpentry, Probst Construction company, $125,815; exterior covering, Smith, Crimp & Eastman, $124,450; painting, J. G. McCarthy, $3472; roofing, W. B. White, $6998.

A contract is about to be made with the Western Dummy Company to build and operate the intramural railroad. This is the road that will run from one end of the park to the other by a circuitous route. It will be nearly 6 miles long. The Western Dummy Company intend to build an elevated electric line at a cost of something like $500,000. They will pay the Exposition Company 25 per cent. of their gross receipts. The Thomson-Houston Electric Company are reported to be behind the concern.

At the request of the Department of Transportation Exhibits, George De Haven of Grand Rapids, Mich., general passenger agent of the Chicago and West Michigan and Detroit, Lansing and Northern railroads, has consented to undertake the work of making a historical collection of railway tickets. Mr. De Haven has in the past given much attention to this subject, and has accumulated a large amount of valuable data Railway men and others having in their possession old, rare and curious railway tickets, time tables, &c., are requested to communicate the fact to Mr. De Haven. He will also be glad to receive information as to the existence of objects of this kind in public or private collections anywhere.

General Flagler, chief of the Board of Ordnance, asks for $150,000 for the enlargement of the Watertown, Mass., arsenal.

San Francisco News.

SAN FRANCISCO, April 18, 1892.

Some time last year I sent you particulars of the export machinery business of San Francisco. I now proceed to give details as to its value for the year 1891. The countries exported to and the values for the past two years have been as follows:

	1891.	1890.
Asiatic Russia	.....	$232
Australia	$128,291	190,157
British Columbia	8,979	25,944
Central America	61,895	44,966
Chili	4,810	5,627
China	9,238	40,174
Fanning's Island	69	.....
Germany	.....	727
Hawaiian Islands	303,787	193,999
Japan	17,494	46,851
Marshall Island	20	.....
Marquesas Island	23	.....
Mexico	139,709	122,437
New Zealand	29,026	28,126
New York	19,339	6,900
Peru	.....	155,130
Tahati	2,031	.....
United States Colombia	3,355	5,270

Here the total for 1890 is $866,540, that for 1891 only $728,066, or about 16 per cent. less. That has arisen partly from the disastrous molders' strike, which helped largely to drive business elsewhere; partly to other circumstances. The heavy shipment to Peru was to have been duplicated last year, but was not, doubtless on account of the difficulties consequent on the strike. Australia has entered on a season of dullness, equally bad as our own, hence the lessened shipments thither. The shipments to Mexico and Central America increased, as also did those to the Hawaiian Islands, and in a most remarkable degree. The Hawaiian group sold more sugar in 1891 than ever before, and increased its purchases of everything, machinery included. The shipments to China and Japan, it is noted, fell off in a marked degree.

As to the present year we cannot now expect much improvement except, indeed, it may be to Mexico and Central America, where our trade has been in very good condition. The islands have up to the present been sending us much less sugar than in 1891. The planters have been bitterly complaining, and, under ordinary circumstances, we may expect a falling off. However, as Claus Spreckels has given over his Philadelphia refinery and has started again to devote his entire attention to beet sugar and to the island sugar lands, it is possible that even here events may take a turn for the better. If Mr. Spreckels gives increased attention to his plantations in the islands it will cause a revival there and new machinery will be wanted.

A good deal of the machinery here noted has been originally manufactured in the East and has been sold for the countries named by agents of Eastern houses, of which there are a number in this city.

The Risdon Iron Works, one of the oldest and most successful of those engaged in the foundry and machine business in this city, is about to enlarge its facilities so as to be able to undertake shipbuilding or anything else that may come up, and it is now a question whether it will not remove its works from this city. This would be quite a loss to San Francisco. Both Oakland and Benicia have been bidding for its removal and our press is getting waked up to the necessity of doing something to keep it here. It would cost a good deal to remove the works and we may be sure that it will not happen unless some extraordinary inducements are offered, or unless the proposed changes should render a change of base imperative.

A company has been incorporated with a large capital to build a new railroad from this city to Salt Lake, where it could have Eastern connections and be a competing line. This will require a great deal in the way of iron and steel rails, &c., and will, when matters get fairly under way, improve the iron outlook here much.

We continue to receive large consignments of agricultural implements here by rail, and there are large sales. Iron and steel generally are in light demand. There is a moderate demand for hardware, but as some houses are taking in sail and cutting down expenses where practicable, we may conclude that business is no better than it should be.

We have been in receipt of considerable consignments by clipper of hardware, iron and steel, and some agricultural implements. Imports of pig iron have not been great. The market for this latter may be given at $23 to $24, with a light demand. In fact, Alabama iron now takes the lead in this market, at least for the present.

Imports of tin plate have been very light since my last. The market is lower, $5.87½ to $6. We have received 1710 ingots of pig tin by the last Australian steamer. This is selling at 21½¢, as is also California, of which 247 pigs came per steamer from the South on last Saturday.

Receipts by rail since our last include 5 cars of iron, 7 cars of steel, 9 of hardware, 21 of machinery, 10 of stoves, 4 of pipe, 1 of rope, 1 shovels, 1 wagons, 2 cable, 5 wire, 11 agricultural implements, 1 mowers, 1 scales, 1 axes, 1 bolts, making a total of 81 cars, besides 28,000 pounds of copper. JOHEMS.

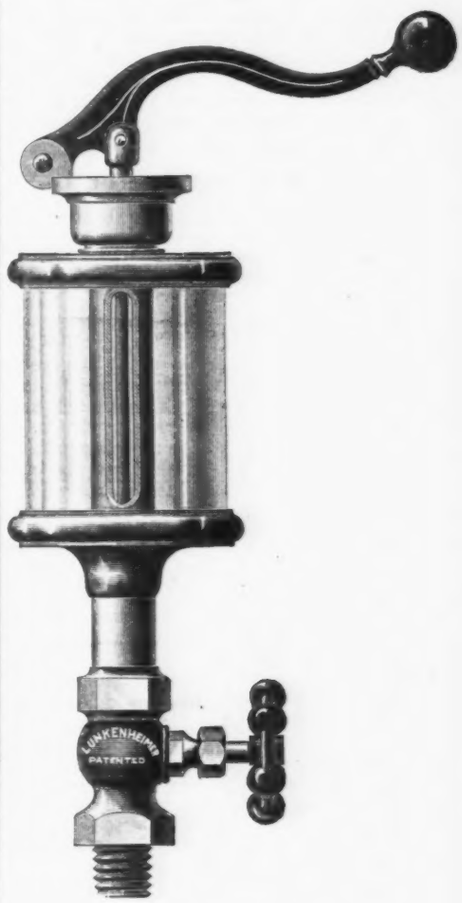
The Herring-Hall-Marvin Company, recently organized under the laws of the State of New Jersey, have issued a prospectus from which we take the following: The capital stock is $3,300,000, consisting of 18,000 shares of 8 per cent. cumulative preferred, and 15,000 shares of common stock of $100 each, and all full paid and non-assessable. The former are now offered for public subscription at par. The several companies forming the new concern—viz., Hall Safe and Lock Company of Cincinnati, Ohio; Marvin Safe Company of New York; Herring & Co. of New York; Farrall & Co. of Philadelphia, and Myers & Smith of Philadelphia, made sales during the fiscal year 1890-91 aggregating $2,842,676.29. The profit for one year amounted to $316,790.10. The assets are placed at $2,003,974.20. It is urged that the company represent neither a trust nor a monopoly, yet that the companies which they unite have been so long established and are so widely known that their business is practically beyond the reach of injurious competition.

The new buildings of the New York Central Railroad at Depew, N. Y., for which W. R. Haven has the contract, will consist of: Two erecting shops, 70 x 600 feet each, with a capacity of 50 engines, 25 each; a blacksmith shop, 80 x 252 feet; machine shop, 80 x 360; boiler room, 36 x 80; pattern shop and storeroom, 50 x 144; casting storage shed, 50 x 150; offices and storehouse, 50 x 144; boiler shop, 90 x 360; boiler-iron shed and blacksmith shed, 20 x 360; transfer table, 80 x 527.

The Lords of the British Admiralty are at present engaged in reducing the engine-room complements of the various war ships at the rate of 30 per cent. When commissioned the Calliope will be deprived of the services of an assistant engineer, and a similar change will be made in the whole of the cruisers of the Pallas class. The artificers of the Bellona and Barham, the machinery of which is now in sole charge of a chief engineer, have been reduced from six to three, the difference being made good with chief stokers. In the Phœbe, again, the number of engineer officers has been decreased from four to two, and the artificers from nine to seven, two chief stokers being added to the complement. A more serious change has been made in the Royal Sovereign, on board of which, notwithstanding the number of her engines, the artificers have been reduced from eighteen to twelve.

Glass Body Oil Pump.

The glass body oil pump here illustrated is made by the Lunkenheimer Brass Mfg. Company of Cincinnati, Ohio. It is intended as an auxiliary to the sight-feed lubricator, and with it any amount of oil can be supplied to the cylinder of an engine at any time. After the pump has been attached, it is only necessary in order to operate it to open the globe valve and then work the lever. The stem of the lever is provided with a plunger which pumps the oil against the steam pressure through a check valve in the bottom of the pump, which prevents the steam from entering the pump when not in use, and as an extra precaution the globe valve can be shut off. To fill the pump, the oil is simply poured in from the top. These pumps are made in two sizes, holding ½ pint and 1 pint respectively, the glass body showing the amount of oil.



Glass Body Oil Pump.

Dr. J. G. Justin of Syracuse, N. Y., will give a Government test of his dynamite shell at Perryville in the near future. A number of Government officials will be present. The dynamite shell invented by John A. Bremmer and Edward Le Fever of Syracuse will be publicly tested in Onondaga Valley about May 1. A 5½-inch Parrot gun will be used at the test.

The Wellman Heating Furnace.

In *The Iron Age* of March 31 we printed a description and drawings of the 132-inch plate mill of the Wellman Iron and Steel Company, at Thurlow, Pa. The mill is served by heating furnaces designed by S. T. Wellman, drawings of which are herewith submitted. The furnaces are of the ordinary Siemens type, with some modifications. The regenerators are very long and narrow, containing a comparatively large amount of checker work. Only about one half of the regenerator is under the furnace, the balance being under the standing. From the end of the regenerator long flues run just under the surface of the ground to the valves and

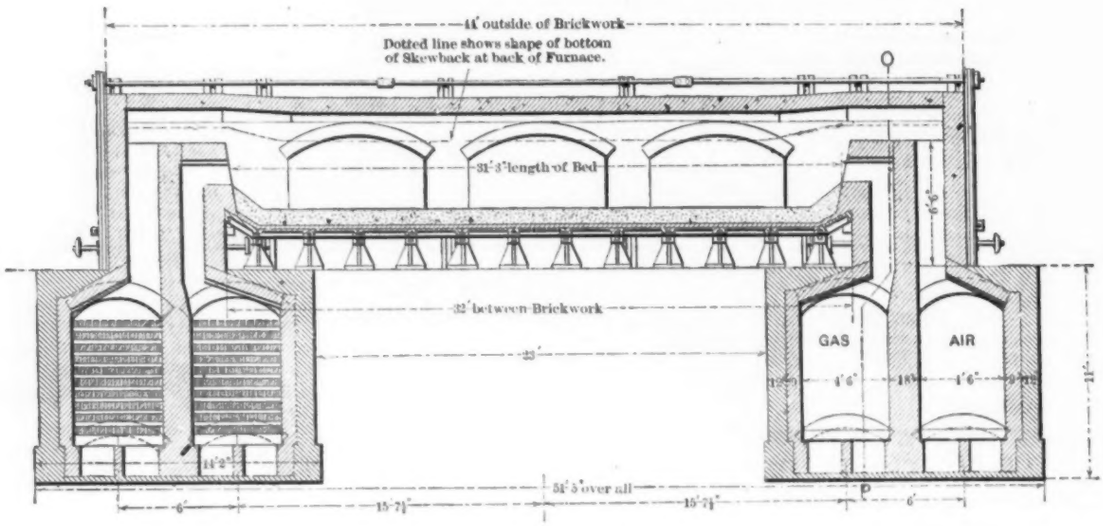


Fig. 1.—Section A B, Fig. 2.

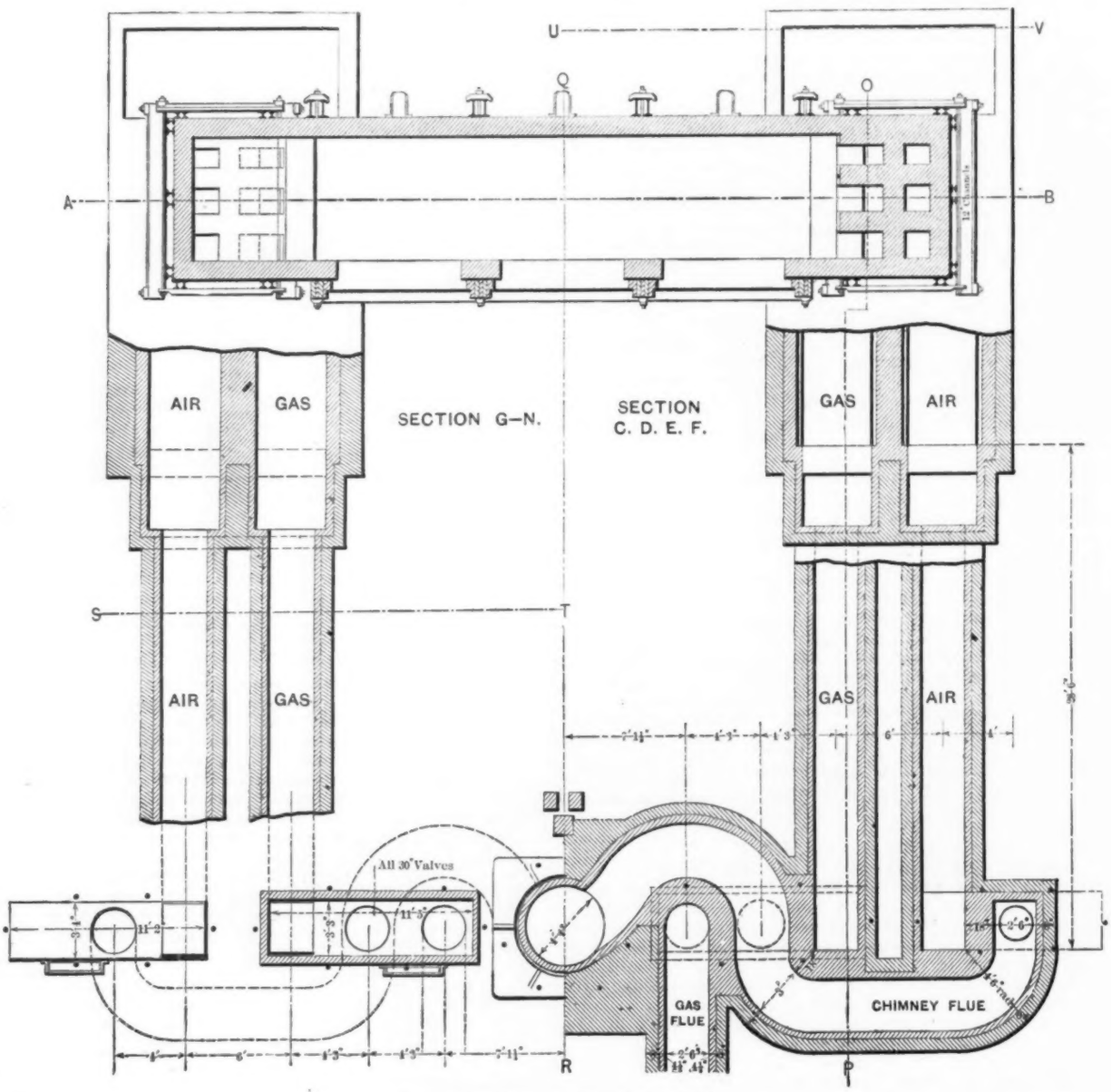


Fig. 2.—Sections G N and C D E F.

THE WELLMAN HEATING FURNACE.

chimney, which are above the ground and outside of the main building.

The valves are single poppet valves of the Hyatt type, being above ground and open, and since they are exposed to the air they are kept cool at all times and are easily accessible when repairs are necessary. This type of valve is always tight and is found to effect a large saving over the ordinary type of Siemens valve by reduced leakage. The valves are worked by small cylinders using compressed air, the cylinders being immediately over the valves and connected directly with them. The large doors of the furnaces are also lifted by compressed air. As will be seen by the drawings, the beds of the furnaces are 31 feet 3 inches long by 7 feet in width. Each furnace has three doors each 7 feet in length. The roofs of the furnaces are very high from the bottom and in that respect the furnace follows out Frederick Siemens' idea of heating by radiation. The two furnaces at Thurlow have turned out over 100 tons in 12 hours, the ingots going into the furnace cold and being heated in most

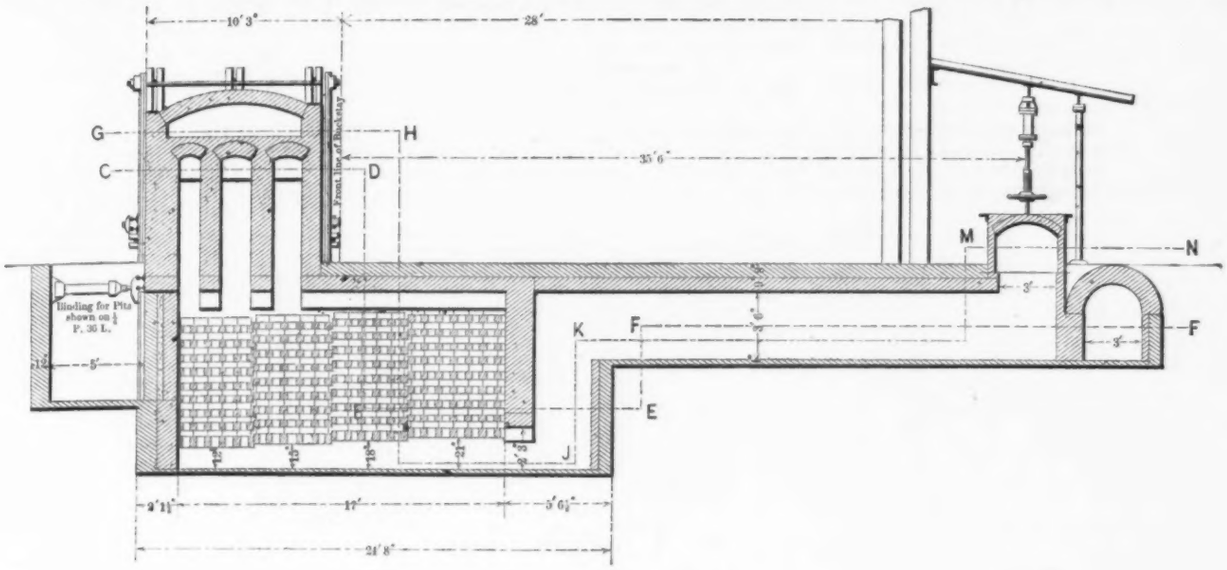


Fig. 3.—Section O P, Fig. 2.

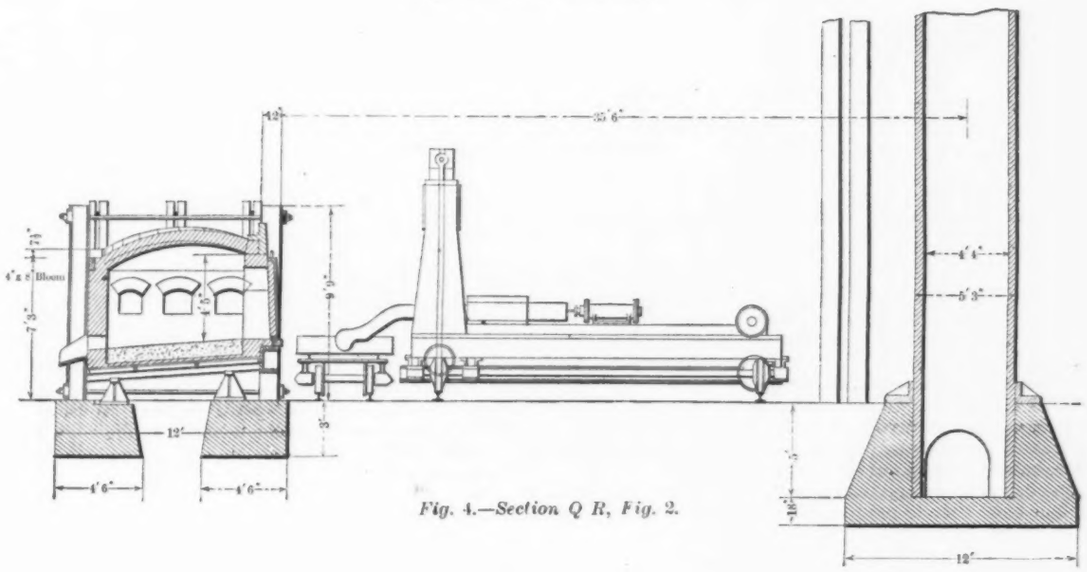


Fig. 4.—Section Q R, Fig. 2.

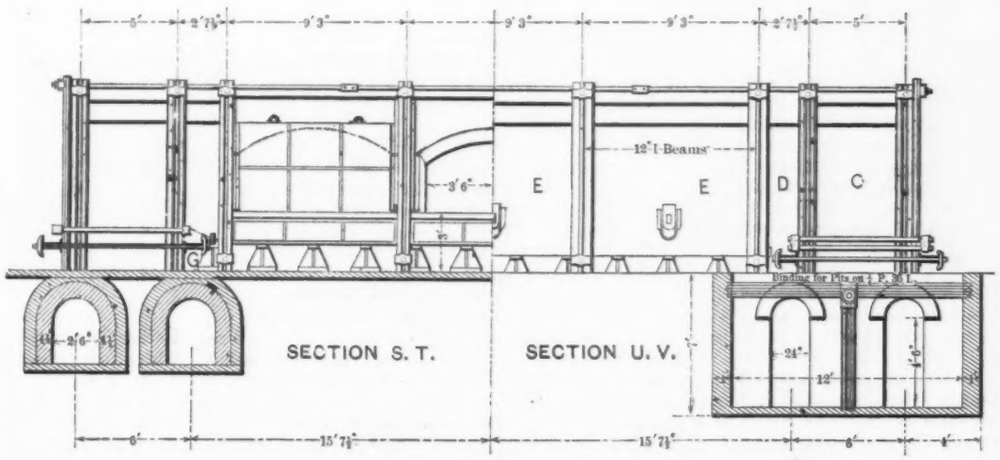


Fig. 5.—Sections S T and U V, Fig. 2.

THE WELLMAN HEATING FURNACE.

cases nearly to a welding heat. The gas producers used are the ordinary circular producers of the Wellman type.

A Boring Device.

BY A. D. PENTZ.

Outside of the factories there are too few persons who appreciate the great amount of ingenuity and engineering skill there is of necessity displayed in the design of the tools by which modern manufactures are brought to their present state of efficiency. Manufacturers understand that when a perfect working sample of a complicated machine is finished it is not yet half ready for the market; in fact, the probabilities are that it never will be marketed in its first shape. Many things that are made now, and all things that are to be made in the time of the perfected arts, are, and shall be, turned out automatically by engine driven tools, and it usually takes as much or more time to produce the tools after the model is finished as it took to make the perfect working model itself. Beyond this, there is the further probability that some of the parts of a machine will need to be remodeled before satisfactory tools can be made for their economical reproduction.

In the making of the first lot of any kind of a device, experienced manufacturers will always judge whether the thing is in the best shape to hit public favor or not, for no matter how much better the inventor may know what the public needs than the latter does itself, it is certain that it will buy what it wants, whether it is what it needs or not. The public will buy an invention if it is put into such a shape that it imagines it wants it; but if it needs it and does not think it wants it, the manufacture may as well stop, for it is a failure.

The makers of new machinery also are obliged to make a small sample lot, and an old manufacturer is indeed a brave man who dares to prepare to make a stock of new goods without feeling his way.

Hence, in the making of a sample lot of machines of any kind it always taxes the ingenuity of the makers to produce them well and cheaply without new tools of a special character. It is at junctures such as this that the valuable traits in workmen are developed. It is true that there are some special kinds of tools made to supply the needs of makers of small lots of machines, but often these special machines are not large enough to do the job; but oftener those who need them do not want them and have not bought them.

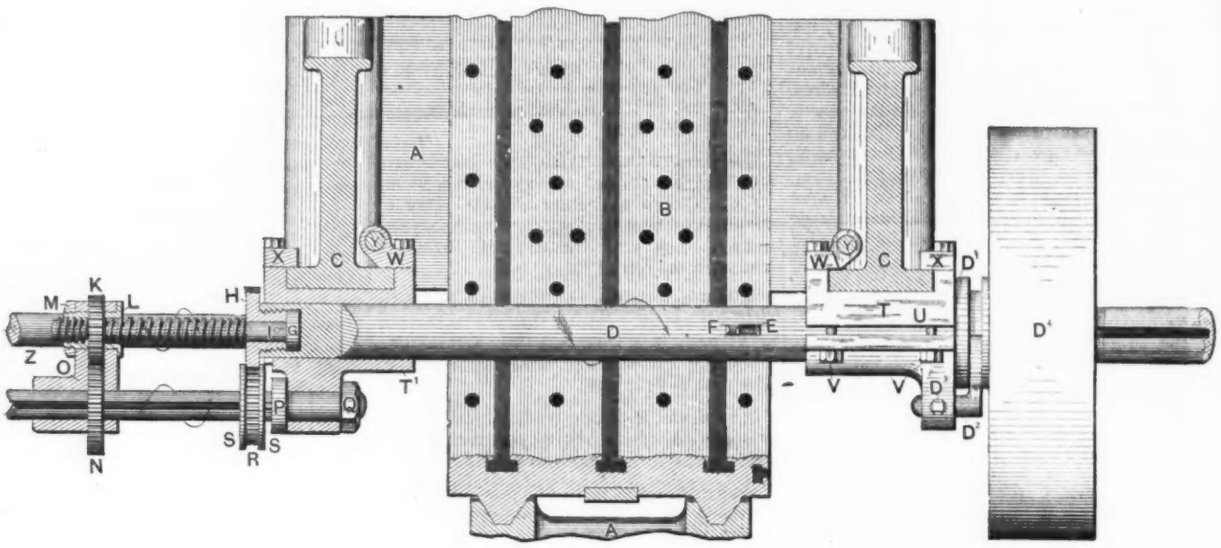
Thus there is required of the makers of a device as much thought and ingenuity to provide temporary tools to reproduce it as was needed in the invention of the device itself; and the assertion is boldly made that in every piece of manufacture which is properly and efficiently made without handiwork by modern tools the inventions in the tools are greater and must be truer to mechanical principles than are those in the article they make. Possibly the ideas for many of the tools may already be found, but the ingenuity to devise and select, to harmonize and adapt, is neither known nor appreciated outside the department of tool engineering and the drafting room. Let an intricate piece of work that is made in great quantities be examined—for instance, a modern watch—and every idea in it noted and scheduled, as if this watch were a creation of this year and not a growth through centuries. Then if these ideas be impartially compared with those in the tools which in a modern concern are found economical to reproduce them in metal, it will be found that the conceptions in tools outnumber those in the watch infinitely, and that the quality and ingenuity of their mechanical worth also are better, and they operate more reliably to produce the effects they are designed to accomplish.

Having recently occasion to use a heavy boring machine to make a trial lot of six heavy machines which have large holes through them that must be parallel to each other, we devised and made a boring rig for a planer (24 x 24 inches by 6 feet) like the accompanying sketch.

Fig. 1 indicates the parts of a planer to which our boring device is attached, as well as the boring rig itself, and Fig. 2 is an end elevation of part of them. A is the bed of the planer and B is the platen; both cut off. C C are housings in section to which the boring boxes are secured. These boxes are marked T and T¹ and are fitted to the housings and fastened by the gibs W X, and suitable screws. The gibs W W have nuts, a part of them, through which the usual rail elevating screws Y Y are arranged, so that the boxes, and by them the whole device, may be elevated to any desirable hight, and the bar will retain its position parallel to the top of the platen in every place where it may be situated.

The boring bar D fits the boxes T T¹ and is perhaps 3½ inches in diameter. It is provided at and near one end with a key seat of suitable length to attach the clutch D¹ to wherever needed and so as to prevent its turning without revolving the bar. This clutch is held in place by the fork D², which in turn is secured within a hole in a lug on the box T by the set screw D³. To a cylindrical seat on this clutch is fitted and fastened by a set screw the pulley D⁴, which drives the whole device.

The other end of the bar D is recessed and tapped left-handed to receive the gear H and the feed screw G, which are fastened together by the taper pin I. The



A Boring Device.—Fig. 1.—Planer with Boring Device.

gear H engages the gear R, which is keyed on the countershaft P. This gear R has equal teeth with the gear H, and is covered on each side by the flanges S S, which preserve the relations of these gears in feeding. One end of the shaft P is held within a lug on the box T¹, to which it is fitted.

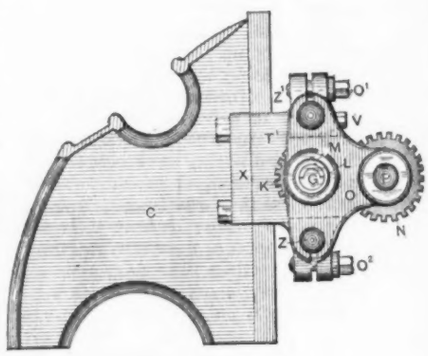


Fig. 2.—End Elevation of Part of Device.

From the box T¹ extend the two rods Z and Z¹, which are attached to that box within two lugs, one above and one below the bar D, in the positions shown in Fig. 2. These rods support the feed stock O, which is mounted on them, and which may be secured to them in any position by clamp screws O¹. Fitted within a hole in the stock O, that is always in exact line with the boring bar D, is the nut L, which is engaged to the screw G, and is held to the stock O by its collar and its nut M. Through a mortise in the stock O, which is shown in Fig. 1 and indicated in Fig. 2 by dotted lines, are fitted the gear K, which is keyed to the nut L, and the gear

N, which is keyed to the shaft P, and which engages the gear K to drive it.

The feed screw G, the shaft P and the rods Z Z¹ have lengths suitable to position cutters like E, in any desirable place between the boxes T and T'.

It is evident when the bar D is turned by the pulley D⁴ in the direction indicated by the arrow, that the gear H and the screw G will be turned also at the same speed, because they are rigidly secured to this bar. The gear H will positively turn the gear R, which in turn will rotate the shaft P at the same speed as the bar D and the feed screw G. The gear N, however, is larger than the gear K, and has the greater number of teeth, in consequence of which the gear K is driven faster in some slight degree than the screw G, but in the same direction, and consequently urges the bar endwise a desired amount each revolution. Thus if the feed screw has five threads to the inch and the gear K has 45 teetb, while the gear N has 50 teeth; the progress of the bar D will be 50 revolutions to 1 inch of feed motion.

I am satisfied that if the screw G were right handed and the gear K were larger than the gear N, more economy would be got. Another needed thing in this rig is a quick return of the bar to the beginning of the cut. This I propose to obtain by putting a crank on the outboard end of the shaft P, and arranging the gear R so that it may be disengaged from the gear H, which easily may be done in many ways.

As the bar D feeds endwise it slips through the clutch D¹, so that the location of the pulley D⁴ is not disturbed. Other sizes of pulleys may be attached to the clutch D freely with no disturbance at any other point.

In boring the platen is bolted to the bed below the rail and the work is secured to the platen in the usual manner, and it often happens that a piece may be planed and bored in one setting. My experience with this rig is that it is a very reliable one and fully as handy as many of the more pretentious boring tools. In fact, it is my intention to devote an old planer entirely to this purpose, and with some modifications I believe it will make a good boring mill at a small cost. I have canvassed the traveling head boring bar for this rig, but believe the one used to be better.

With this device, costing $100 at the most, we bored four machines at a cost of less than $8 each. One machine we had bored and planed in a jobbing shop because we were in a hurry and could not wait until our rig was done; cost, $70. Our planing and boring at the same price per hour as was charged by the jobbing shop cost us less than $25 each. Hence if we charge the whole cost of the boring device to these four machines we are ahead of jobbing prices; but the rig is still new and we have plenty of work for it.

It is thus in trial manufactures that good results are got at a smaller cost than by ordinary methods, so that the full suit of tools does not need to be made, nor until the device to be made has settled down to its standard form.

A stock company, composed of Medina, N. Y., business men, with a capital of $50,000, have purchased the Little Giant Parcel Carrier, which was recently invented by Shannon & Tucker of that place, and will manufacture and sell this new device extensively.

The Star Headlight Company of Rochester, N. Y., have elected the following officers: President, E. C. Glazier; vice president, George S. Riley; secretary and treasurer, J. G. Platts; directors, Messrs Glazier, Riley, Platts, Theodore Goers and E. L. Pottle.

THE WEEK.

The House passed the Naval Appropriation bill, which provides for only one additional armored cruiser for the new navy. Propositions for the construction of more than one were defeated.

Revised plans for the New York and New Jersey Bridge over the North River provide for a combined suspension cantilever structure with a river span of 3200 feet.

The establishment of a line of steamers on the Bogota River above Puenta has proved beneficial to commerce in that part of Colombia.

The New York State tax rate, as fixed by the Comptroller for the current year, is 1 98. The tax rate is the lowest since 1862. In 1891 the tax was 1¾, in 1890 2.34, in 1889 3.52.

Bankers in this city ridicule the impression that the tourist movement is a factor in the foreign exchange market. One of them states that the immigrants bring far more money into the country than the tourists take out of it.

A fine new bridge, built by the Pencoyd Bridge Company, spans the Wabash river at Attica. It is 1880 feet long and weighs 2,256,000 pounds exclusive of masonry. The cost is $135,000.

The Brazil Mail line from this port comprises five American ships and 10 chartered. Two of the former will be laid up.

So great is the rush of emigrants from Germany that the Hamburg-American Company have purchased the German Hanse fleet, formerly running from Hamburg to Montreal, and added them to their line.

The John Doty Engine Company of Toronto are building a steel steamer of a somewhat peculiar type. Instead of the cigar-shaped bow of the whalebacks, the boat has a ram bow, with a forecastle deck forward, the top sides of which flare outward slightly, something like the mold board of a plow. The dimensions of the boat are 225 feet length of keel, 38 feet beam and 20 feet depth of hold. She will be fitted with fore and aft compound engines, having cylinders 26 and 50 inches in diameter, with 12 inch stroke. She will be supplied with steam from two cylindrical boilers 12 x 11 feet, and is expected to have a speed of 13 miles on a coal consumption of half a ton per hour. She will register about 850 tons and have a carrying capacity of about 2200 tons on a 15-foot draft.

Machinery Hall of the Georgia Technological School, at Atlanta, comprising the whole mechanical department, was destroyed by fire on the 21st inst.

Senator Sherman, in opposing the Chinese Exclusion bill, warned the Californians, its earnest advocates, that so grave a breach of commercial relations with China as the Geary bill would cause meant the building up of Vancouver as the great port on the Pacific of exchange with the Orient, and the consequent decline of San Francisco.

The whole of Manhattan Island was sold by the Indians to the Dutch for $24. Not long ago land on the corner of Broadway and Wall street was sold for $27 a square inch. It is argued by President Low of Columbia College that at the present day land held under the conditions of Indian life is without appreciable value.

Europeans are not permitted to maintain trading stations on the coast of Africa without a contest. King Behanzin threatens to expel the French from Dahomey, and British trade at Lagos, which for 30 years has been prosecuted successfully, is endangered by troubles in Yoruba, back in the interior.

The Williamson Free School, near Philadelphia, is now in full working order, though capable of large extension in the future. The buildings and grounds are near Elwyn, on the line of the West Chester Railroad. The location is far enough from the city to give the boys the advantages of country life, and near enough to permit managers and visitors to make trips to it at any hour of the day. It is not only well equipped for its special work, but is sustained by an endowment sufficient for its present purposes.

The engineering students of the University of Michigan at Ann Harbor last week visited the Otis Steel Works in Cleveland.

The Japanese Government being dissatisfied with the existing treaties with the Western powers on account of the restrictions imposed in the collection of revenue, the Mikado has appointed a committee who will report a draft of a revision.

Hon. Charles W. Stone has introduced a bill in the House of Representatives providing for a standard measure for iron and steel sheets and plates. It was referred to the Committee on Coinage, Weights and Measures. A delegation representing the Amalgamated Association of Iron and Steel Workers has appeared before the committee in advocacy of the bill. The delegation consisted of William Weihe, president of the association, Messrs. William Hughes, Charles Kaufman, George Somers, Milton Cook and Thomas Hogan.

Corporations in Indiana have formed a strong combination to resist the tax levy, because the law gives little opportunity to be heard before the State Board of Tax Commissioners, and, therefore, the validity of the tax is questioned.

Lake and rail rates have gone to pieces since the opening of navigation, and it is now believed to be only a question of a few days when the all-rail rates between Chicago and the Atlantic seaboard must take a tumble.

It is announced that the Philadelphia sugar refiners who were bought out by the trust will, in connection with other capitalists, establish a large refinery in Cuba and put it in operation early in 1893.

A report from Swansea, Wales, says that owing to the depression in the tinplate trade, caused by the passage of the McKinley bill, a number of the largest Welsh manufacturers intend to erect works in the United States.

It is reported by way of Philadelphia that the manufacturers of steel locomotive tires have at last arrived at an understanding with regard to the sale of their product, by which the excessive competition of the past few years will be ended and a remunerative price obtained. The number of concerns manufacturing locomotive tires is five—viz.: The Nashua Iron and Steel Company of Nashua, N. H.; the Midvale Steel Company of Philadelphia, the Standard Steel Company of Lewistown, Pa.; the Latrobe Steel Works of Latrobe, Pa., and the Chicago Tire and Spring Company of Chicago. The conflicting interests have been harmonized by an arrangement between the companies which is reported to be satisfactory, and it is now expected that the business of the future will be conducted on a basis which will be much more agreeable to the stockholders of the several companies than the late ruinous competition. The price of tires had been reduced to such a point that some of these companies have recently paid very little attention to their tire business, notwithstanding the possession of excellent facilities for production.

The Iron Age

New York, Thursday, April 28, 1892.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.

Iron and Steel Exports vs. Imports.

The summary statement of imports and exports recently issued by the Treasury Department for the eight months ending February 29 last presents an exceedingly interesting fact. For probably the first time in the history of our country the exports of iron and steel and manufactures thereof are shown to have exceeded the imports. The official figures, excluding iron ore, for the period named, as compared with the corresponding period of the five preceding years, are as follows:

Eight months.	Value of imports.	Value of exports.
1891-92.....	$16,329,207	$20,463,764
1890-91.....	29,820,502	18,823,384
1889-90.....	26,966,085	16,735,594
1888-89.....	27,482,620	13,840,732
1887-88.....	34,614,336	11,641,476
1886-87.....	27,850,422	10,713,182

These figures show a steady growth in our export trade, which has practically doubled itself in six years. On the other hand, imports of iron and steel have been heavily cut down in the past year to but little more than half their former volume. Six years since our exports were but about one-third the value of our imports. This year the conditions are so radically changed that our imports have been but four-fifths as great as our exports. During the term of years here covered, the high tide of importation was reached in 1887–88, which, it will be remembered, was a period of great prosperity with us. The volume of imports shrunk in the succeeding years until 1890–91, when the approaching advance in certain duties by the McKinley tariff caused heavy importations of the articles affected, swelling the imports of that year to the proportions noted above.

The effect of the McKinley tariff in restricting importations is seen in the aggregate figures for 1891-92, but it will be more thoroughly comprehended by examining the details. The heaviest reduction in imports was in tin plates. These fell to $5,365,930 in the eight months referred to, as against $17,260,154 in the corresponding period of 1890-91; $13,823,006 in 1889-90; $13,095,821 in 1888-89; $11,852,893 in 1887 88; $9,896,807 in 1886-87. The average imports for the four periods from 1886 to 1890, before the expectation of advancing duties affected importations, were $12,167,132. The average of the last two periods, covering the very heavy imports of last year and the very light imports of this year, is but $11,313,042, or below the normal average. Turning to other details, it will be found that cutlery shows the next heaviest falling off in imports after tin plates. Hoops or ties for baling purposes are also conspicuous in this regard. Both articles were affected by the McKinley tariff, the domestic trade in them now going largely into the hands of American manufacturers, baling hoops or cotton ties being, indeed, almost exclusively controlled by the home makers. There are other changes in the line of reduced imports which can be ascribed to the quiet condition of general trade on this side of the Atlantic, but, on the other hand, in some few articles, such as machinery, miscellaneous manufactures and sheets, there have been increased imports, so that on the whole the shrinkage in the grand aggregate may safely be attributed to the restricted importations of articles on which duties were advanced by the McKinley tariff.

It is possible that an increased demand for iron and steel might again stimulate importation to some extent, but it does not seem probable. The conditions affecting international trade of this character would, on the contrary, bear out the assumption that a permanent change has taken place and that hereafter our imports of iron and steel are more likely to diminish than to increase. For instance, black sheets for tinning are being imported to some extent, pending the development of facilities here for their production in sufficient supply to meet the wants of new tin-plate works. The purchase of such sheets abroad is but a temporary incident, similar in character to the purchase of Bessemer pig iron abroad when the Bessemer process was first introduced, and will terminate in the same way. The tin-plate industry is also getting well established and will make increasing inroads on the import trade. In other articles which might be mentioned the imports now constitute but a slight percentage of the total consumption and are due to special causes, among which is the purchase of material to be re-exported in more finished shape. Our export trade, on the other hand, is destined to grow, being assisted by the steady cheapening of prices in this country and by the favorable terms upon which entrance into some important foreign markets has been secured.

A circular issued by the Crescent Steel Company of Pittsburgh, manufacturers of crucible steel exclusively, says: "The rapid strides in the 'metallurgy of steel' have no better illustration than the fact that the Crescent Steel Company have during the last quarter of a century rebuilt every portion of their works. Of their various mills, no vestige of the original buildings remains except one small edifice, which is retained as a relic. Some of these mills have been remodeled and rebuilt several times, and new departments have been added."

This is another and striking illustration of the fact often alluded to in our columns that iron and steel manufacturers must endeavor to earn, in addition to a fair return on their capital invested, a sufficient fund to reconstruct their plant after a certain time. If they cannot do this they are destined to fall out of the race, which can only be carried on by those who are able to introduce improved machinery and processes.

The Chicago Building Collapse.

Chicago coroners' juries are making themselves a record in holding men responsible when through their negligence or carelessness the lives of others have been lost. Recently a jury preferred criminal charges against the City Building Commissioner, two of his inspectors, an architect and the owner of an unfinished building which collapsed during a heavy storm on the 1st inst. It was a seven-story brick structure, belonging to Samuel E. Young, and intended for the use of Street, Young & Kent, manufacturers of plumbers' specialties. When it collapsed it crushed some adjoining buildings, killing no less than seven of the inmates. The catastrophe was at first attributed to the force of the wind, as a heavy gale was blowing at the time, and the building was not inclosed. On subsequent investigation, made the more searching by the great loss of life, it was found that proper care had not been taken in the erection of the building, and that its collapse was due to structural weakness, for which all the parties above named were held responsible. The laxity of city building inspection has been shown up very strongly, and it is probable that another result of the investigation may be the licensing of architects. The coroner's jury recommended that measures should be taken to control the erection of buildings by compelling architects to take out licenses after proving their qualifications, the same as physicians, plumbers and a few other branches of professional men and mechanics whose occupations have relation to the health or safety of their fellow men.

Progress of Shipbuilding.

Discussion continues rife respecting the remedies best adapted to effect a revival of American shipping interests, some advocating liberal bounties from the Government treasury, while others, known as "free ship" advocates, would admit foreign built ships to American registry. Meanwhile shipbuilders at all the great lake ports are giving us actual results of a very cheering character. The commerce of the great Northwest, largely made up of grain, ore and coal, is bringing into existence, without exciting much observation, a fleet of steamships so numerous, of such large dimensions, and of such a superior character, mechanically considered, as to go a long way toward solving the national problem. The shipbuilding *résumé* of the lake ports for the present season, printed in our last issue, shows that a heavier tonnage is being built for the lake marine than is building for the merchant service at all other ports in the United States. This development has been in progress for the last decade, acquiring importance year by year, until the record for the spring of 1892 shows that vessels are under construction of a capacity exceeding

65,000 tons, and that if the whole were put in line they would form a procession 2 miles in length. The expenditure upon them is estimated at $5,186,000.

Five are for passengers, five for Government service and the rest are freight carriers. The largest is 362½ feet long, with a capacity of 4000 tons. Three others are 350 feet long, with a capacity of not less than 3800 tons at the present low stage of water. About 80 per cent. are steel, the rest being iron or wood. Builders in Cleveland, Detroit, Chicago, Bay City and Buffalo are all in sharp rivalry, each aspiring to put afloat the best specimens of workmanship.

While the whalebacks may rightly be considered a permanent innovation, it can hardly be claimed that this style of construction is adapted to ocean navigation, unless modified in essential particulars. The experience of the Charles W. Wetmore, which went down the St. Lawrence from Duluth to Liverpool, and afterward took a cargo of machinery from Baltimore to the Pacific Coast, to say the least, was unfortunate. The hard pounding of the seas "turned her nose up," it is said, and the plates in her bow were badly strained. We may therefore accept as pretty nearly correct the conclusion of the Buffalo *Commercial Advertiser*, which says:

"There is reason to believe that the vessels most profitable for and best adapted to lake service are not adapted to ocean service, and that no class of vessels ever likely to be able to get through Canadian or American canals will be able to compete with the huge lake liners that carry full cargoes, down and up, from Chicago and Duluth to Buffalo, at rates that would not have been deemed possible a few years ago. As for the whaleback type of freight carriers, there seems to be no reason to question their usefulness on the lakes or, with proper modifications, on the ocean."

From New England ship yards and from the Delaware we likewise have cheering accounts, although the proportion of wooden vessels building is on a very limited scale. The exceptions here, as in England, are in favor of large sailing ships adapted to long routes, where coaling stations are found with difficulty, if not wholly lacking. In the maritime provinces of Canada, too, wooden shipbuilding falls far short of the tonnage of former years.

In reference to the growth of the American merchant marine, despite the favorable indications above noted, the unwelcome fact remains that while Great Britain adheres steadfastly and successfully to her policy of granting steamship subsidies, none of the measures of relief devised by Congress, such as the relief of shipping from taxation, the importation free of duty of materials for shipbuilding (as per Sections 8 and 9, Act of October 1, 1890), or the recent ocean postal contracts for the encouragement of steamship lines, have proved adequate to the end in view. Dismal complaints come from every quarter of the globe that the American flag is rarely seen in foreign ports. Yet the fact is beyond dispute that substantial progress has been made in the right direction. So eminent an authority as the senior member of the famous shipbuilding firm of Harland & Wolf of Belfast said while in this country, that "the United States is quite as proficient in shipbuilding as the European nations." The only essential point that remains in dispute respecting the advantage of building on one side of the Atlantic rather than on the other is the relative cost of materials here and there, and market quotations show that the margin in this respect is constantly lessening.

Just now the "free ship" argument is being brought forward once more by two bills prepared for the action of Congress; but practical builders on this side will fail to see how a surrender to their rivals in Europe, even as a temporary expedient, will aid to establish on a permanent basis an independent national merchant marine.

Trade in Old Material.

The unsatisfactory condition of business is felt very seriously by the dealers in old material. They have for years constituted quite an important section of the iron and steel trade. Their interests have advanced proportionately with the general expansion of the American iron industry, and many firms making a specialty of old material have grown from humble beginnings to houses of acknowledged financial strength. There was a time when the scrap merchant of the interior was a mere junk dealer, while great importing firms on the seaboard did not think it beneath their dignity to handle large quantities of old material, brought from abroad to supply the requirements of our manufacturers. That day has long since passed by. The country has not only so thoroughly developed its resources as to meet its necessities in the way of new iron and steel, but its railroads and its many manufacturing establishments are throwing on the market quantities of old material and scrap which in the aggregate are so immense that special facilities must exist for the diversion of this stream of raw material into the proper channels of remanufacture. These facilities are presented by the dealers. They are often ignored, it is true, when direct trades are made between railroads and manufacturers of railroad supplies, but their functions are recognized perhaps by both parties in contemporaneous transactions. Many consumers depend upon dealers altogether for their supply of scrap, finding it much more satisfactory to purchase selected materials than to buy indiscriminately and do their own assorting.

As the scrap dealers are merchants and not producers, it may appear somewhat singular that they are affected to any serious degree by the depression in trade, which should only cause a shrinkage in the volume of business handled. But the trouble is more deeply rooted than that. Their apparently permanent standards of value have been sadly shaken, if not overthrown. Old iron rails and wrought scrap have hitherto been such staple articles that declining values and diminished demand were sure to be followed by rallies when accumulated stocks could be disposed of at a profit. There were seasons of activity every year when values of such material would jump dollars in days, and yards would be cleaned up suddenly. Even in the most depressed times hitherto known these rallies could be depended on, hence dealers did not fear to take in wrought stock when it could be had at a price below the yearly average. But for more than a year there has been no reaction in this or any other grade of material. Prices have declined steadily, and the demand has continued to shrink. The most astute dealers, with their wits sharpened by the experience of many years in the ups and downs of trade, have been baffled of late in their calculations time and again. It is a common saying among them that the richest dealers have suffered most. They have carried heaviest stocks, bought at lower and lower prices, to reduce the average cost, only to find that values would not rally, and that some sacrifice would have to be made if they desired to sell. The smaller dealers being obliged to make quick turns have often fared much better, replacing stock sold at a slight loss by purchasing more at a much lower price.

The change from iron to steel, which has been such a marked feature of the iron trade the past year, has, of course, been largely responsible for the destruction of the old standards of value in the scrap trade. The future may bring some reaction from this movement, especially if there should be any sudden increase in the demand for steel rails and other finished products, but this is now merely a matter of speculation, and in the meantime existing conditions must be accepted as if they were permanent. Instead of struggling to maintain stiff prices on old material, dealers should accept what appears to be the inevitable and endeavor to work down to a lower basis. Scrap is a mere matter of salvage to those with whom it originates, having no element of cost to be considered, and its value is regulated entirely by the demand. The dealer puts some labor on it in the way of assorting it, but his work makes but a trifling addition to its cost. The cheaper it can be had the more likely is it to continue to be used by those iron makers who are endeavoring to hold their own in the struggle with steel.

The Acreage of Cotton.

Miscalculations respecting the amount of last year's yield of cotton were so wild that reports of the acreage under cultivation this year will be received with hesitation. Already voluminous statements from the cotton growing States have been procured, which indicate an average reduction of about 16 per cent. compared with last year's culture. All who are interested in the trade, manufacturers excepted, unite in the attempt to restrict the enterprise of planters, on account of the enormous quantity of the last crop coming into

sight, which up to the present time exceeds 8,500,000 bales, although the authorities usually relied upon long ago fixed the maximum figures at 7,600,000 bales. The hope is now expressed that the 16 per cent. reduction aforesaid will be sufficient to restore a lucrative price, so that no permanent disaster may overtake an interest so essential to the prosperity of the Southern States and of the entire country. Even a temporary interruption of cotton culture, so general as to cause a dearth in the world's supply, and consequently to stimulate rivals in India and Egypt, it is conceded, might prove to be an irreparable calamity. Planters claim that at present prices the business is unprofitable, so that large crops in the South no longer impart buoyancy in business circles. Despite the marketing of crops, large beyond precedent, business throughout the Southern States is depressed, more so than for years, according to common report, though of late some improvement has been noticed. Special endeavors are making to diversify crops in the South, but the desired change must be gradual, when experience, predilections and all natural conditions favor the old paths.

OBITUARY.

CHIEF ENGINEER N. B. CLARK.

Chief Engineer N. B. Clark (retired) died at his residence in Washington on Monday morning. Mr. Clark was well known throughout the service and abroad as a persistent advocate of defective armor for war vessels, also on account of his numerous ingenious inventions appertaining to engineering and ordinary matters. Although an invalid since his retirement, in 1868, he had performed a great deal of work of an inventive nature, and was a busy man up to the time of his death.

GEORGE E. PUTNAM.

George E. Putnam, superintendent of the Putnam Machine Company of Fitchburg, Mass., died at his home at that place on the 23d inst. Mr. Putnam was about 40 years old, and had long been superintendent of the Putnam Company, as well as a member of the firm.

PERSONAL.

Henry Roberts, for some years general superintendent of the mills of the Oliver & Roberts Wire Company at Pittsburgh, has decided to give up all business connections for a period of six months. The following official statement has been given by the firm concerning this matter: Mr. Roberts has been working faithfully and diligently for the company over 11 years, practically without any rest. He has concluded to give up work for six months and will hand over the management of the works of the Oliver & Roberts Wire Company to Robert Naysmith, who for many years was his assistant, but who resigned his position three years ago to accept that of superintendent of the Allegheny County Light Company. Mr. Roberts has not disposed of any of his stock in the company, but will retain his interest therein as well as his position on the Board of Directors.

Henry M. Warren, of Warren, Wood & Co., New York, has just returned from a four months' European tour.

CORRESPONDENCE.

Lake Superior Charcoal Iron.

To the Editor: Your editorial upon the charcoal iron situation is excellent and to the point. There is no industry so easily managed and a profitable return secured for the large capital invested as that of the Lake Superior charcoal iron industry. With a limited product, difficult to increase, and about, in amount, near the wants of the trade, we see the producer disposing of it at an actual loss so that he may secure a sale of his product, hoping some day or other a time may come and a profit may be had.

A remedy for this is asked. It is difficult to offer it under present conditions. What is the situation? We find no unification of interests by the producer with a large combination of capital by the purchaser. The product of the different furnaces is largely handled by different sales agents, and it only requires the competition of the sales agents to give the purchaser any price, just a little lower than someone else offers, that he may secure a sale. The cost of the product, or profit, is lost sight of in a scramble to make a sale. The commission sales agent secures his profit and the manufacturer gets left. The remedy for this is obvious—a reduction of sales agents or a combination to sell the product by one great commission sales agent who will handle all of the product of the Lake Superior charcoal interests. Properties much more divers fied in their interests have found it possible to unite for their protection. Why not those so nearly related and easily managed as those of the Superior district?

The public can never be permanently interested in securing anything sold at less than cost. So it is to the public interest that this state of bad management be righted.

It seems that every one is at liberty to scoff and kick at this industry. It is the fashion for those who should use it for their own profit to argue against it, that a cheaper material may be used. The overproduction of other irons has led their agents to argue against it, that theirs might be used. There never was a time when the legitimate demand for charcoal iron should be greater if the manufacturers of the various products, when it should be used, considered strength and durability rather than cheapness in their uses of iron and mixtures.

Is there a Moses to lead us out of this wilderness? Can we not see that a national product needs a national policy? The day of small isolated manufacturers attempting to continue business as it was done 50 years ago is passed, and we must follow the lead of some of our Southern iron men and unite or be destroyed.

What charcoal iron men want is a better opinion of themselves and their product. If there is a single abuse in the iron trade that they have not got, I have been unable to find it. A revolution is necessary. Stop selling iron to-day, shipping it to-morrow and asking pay for it any time in the future the customer thinks it will be convenient.

Stop guaranteeing prices of iron that any hard up furnace with a large accumulated stock agrees to offer, when a hundred-cents-on-the-dollar-furnace has made a sale. Stop attempting to make charcoal pig iron in an old played-out furnace that cannot afford to go out of blast because the stockholders will not want to meet the inevitable pay day that some day must come.

In short, carry on the pig iron business by honest business methods, up to the times, controlling prices and production, selling their product in its legitimate market, and by economical management, latest and approved methods of manufacture, reduce the cost so that a small advance of present prices may be maintained at a fair profit to the manufacturer.

Respectfully submitted by

Your obedient servant,

A. HOWARD HINKLE,

President Ashland Iron and Steel Company, Ashland, Wis.

CINCINNATI, OHIO, April 25, 1892.

NEW PUBLICATIONS.

A GUIDE TO ELECTRIC LIGHTING. By S. R. Bottone. Published by Macmillan & Co., New York; illustrated; 12 mo; 189 pages; price, 75 cents.

The author first deals with the various kinds of primary batteries, which is followed by a description of the mode in which the battery works, so as to enable the reader "to form an idea of the relative adaptability of the different forms for the particular purposes to which they may be applied." Now follows a description of different forms of dynamos and the best known arc and incandescent lamps and the methods of wiring. The chapter on accumulators contains a description of a very effective one that can easily be made by any amateur. The fifth chapter considers the smaller appliances which are necessary in any electric lighting system. The final pages are devoted to the electric motor and a discussion of the cost of power obtained from the motor. The book is well written, free from technicalities, and deals with the subject in an original and instructive way.

BULLETIN OF THE UNITED STATES NATIONAL MUSEUM, No. 42. Smithsonian Institute, Washington. By Frederick P. Dewey.

There has been installed at the National Museum a collection in economic geology and metallurgy, designed to show the actual occurrence of each metal and the processes used in extraction. For each metal a series of minerals has been collected in which the metal forms an important constituent, then a series has been chosen representative of the material actually mined. This is followed by the different fuels, fluxes and materials entering into the operation of extraction, and the products, the waste products and by-products obtained therein. The volume now issued by the National Museum is a descriptive catalogue of the collection, containing substantially an account of the principal deposits and description of the process of extraction, with analyses of typical samples and schemes showing the operation of concentrating and smelting plant. The work is admirably illustrated and the text shows a thorough knowledge of specifically American methods.

The Scientific American ENCYCLOPEDIA OF RECEIPTS, NOTES AND QUERIES. Edited by Albert A. Hopkins. Published by Munn & Co., New York; octavo, 675 pages; price, $5.

This book contains a careful compilation of the most useful of the receipts and replies which have been given in the "Note and Query" column of the *Scientific American* during the past 50 years. Nearly every branch of the useful arts is represented in the more than 12,000 receipts here presented. To illustrate the scope of the work and the industry and care expended by the author, we may state that under the head of alloys there are over 700 receipts given, under cements 600, lacquers 120, electro-metallurgy 125, photography and micro-copy 600, and so on through the work. The matter is admirably arranged, being placed alphabetically under appropriate heads. The subjects are fully cross indexed, so that there is no

difficulty whatever in finding any information under any desired head. The author in his preface lays well-merited stress on the fact that if the inexperienced reader should sometimes be unable to secure the expected result, it may be well for him to ascertain if it is not due to one of the following causes: Use of wrong or impure materials, want of care in following the directions, mistakes in quantities and in the order of mixing, and difference in strength. The book cannot help but be of great value to any one, no matter what industry he may be interested in.

The Bancroft to be Launched.

On the 30th inst. the practice vessel designed for the use of the Naval Academy at Annapolis will be launched from the works of Samuel L. Moore & Sons' Company of Elizabethport, N. J. The contract for this vessel was made July 18, 1890, the price being $250,000.

The practice cruiser has a length on load water line of 187½ feet; a breadth of 32; a mean draft of 11½. Her displacement is 838 tons. Her motive power consists of twin screw vertical triple-expansion engines, which are to develop 1300 collective horse-power. The maximum indicated horse-power of the Petrel, which has single-screw engines, is 1513; but while the Petrel's speed is only 12 knots, that of the practice cruiser is to be 13. Her bunker capacity is 140 tons of coal, with which amount she can steam a distance of 1560 knots at her maximum, or 2400 knots at 10 knots an hour, and 3850 at 8 knots. Her rig is that of a barkentine, with about 5000 square feet of plain sail.

Her battery is to be light, but thoroughly modern. It consists of four 4-inch rapid fire guns, mounted on central pivot carriages, with 2-inch steel shields, supplemented by a secondary battery of three 6 pounders, two 3 pounders, and one 1-pounder rapid fire guns, a 37-mm. Hotchkiss revolving cannon, and a Gatling. It will be observed, therefore, that while this is an Academy drill ship, it is also an effective gunboat.

Otis Steel Company's Annual Meeting.

The condition of the steel trade in the United States is not as satisfactory as it might be, from the standpoint of English stockholders in American concerns. A meeting of the Otis Steel Company, Limited, held at London, England, March 22, reviewed the business of the company's plant in Cleveland, Ohio, for the year. J. T. Smith, who presided, referred to the great expansion of the iron and steel trades in 1890 in the United States, and the depression which had followed, reducing prices to a point which had not previously existed. The dullness in the trade had been such that no alternative was left but to compete in the general market for any material in steel for which the machinery could be adapted, and which, while satisfying the men, left little or no profit for the company. He had visited the works, and had come to the conclusion that however much Americans were ahead in regard to labor-saving appliances, in details of management Englishmen were not behind. It had therefore been decided that certain changes should be made, many of which had been carried out, the cost sheets showing an improved result. The steel trade improved, but not to the extent expected. The company were, however, making a moderate profit, and hoped this half year not only to earn the debenture and preference interest due to them, but to pay the preference interest due January last. They also hoped at the next meeting to pay a dividend on the ordinary shares. The works were good and well situated, and the company possessed a high reputation for the quality of their products.

Fastest Train in the World.

On October 26 last the New York Central and Hudson River Railroad began the experiment of running a train daily, except Sundays, from New York to Buffalo, a distance of 439.6 miles, in the scheduled time of 8¾ hours, or at the rate of 50.70 miles an hour, including stops. The train sheet up to the 1st of April shows that 186 runs had been made, and that on 80 of these runs the train was on time at each stop. The train reached Buffalo on time on 72 per cent. of its trips, and within five minutes of its time on 79 per cent. The train consisted of an engine and four cars, weighing 230 tons, the engine weighing 60 tons and having a weight of 40 tons on the drivers. The cylinders were 19 x 24 inches; drivers, 78 inches; heating surface, 1821½ square feet; grate area, 27.3 square feet. The longest delays were caused by storms and head winds.

Trade Publications.

ENGINEERING SPECIALTIES for steam, water gas, oil and chemicals are fully described in a catalogue issued by A. Aller of 109 Liberty street, New York. The constant and ever increasing demand for their machines is the best evidence of their high efficiency and reliability. Among others we notice the following appliances: Korting injectors and steam jet pumps, steam jet air exhauster and compressor, the Korting graduated steam jet blower, steam jet ventilators and chimney draft improvers, the Lyman steam condensing exhaust pipe head, Curtis pressure regulators, steam damper regulators, lubricators, &c. In the introduction it is stated, "We have increased our facilities for quick repairs on all our machines without being obliged to send to the factory, and we also exhibit any of these articles in actual operation at our warerooms."

THE SHIPMAN ENGINE COMPANY of 200 Summer street, Boston, describe, in a recent catalogue, their automatic steam engines of from 1 to 8 horse-power, the boilers for which are made to use kerosene for fuel. One of the essential points in this motor is that it is automatic, so that when once steam has been generated in the boiler practically no further attention is required beyond that of opening and shutting the steam valve whenever the engine is started or stopped—the fire, speed and water supply being so arranged as to attend to themselves. These engines are adapted to all places where small power is required, and owing to the small space occupied are particularly serviceable for driving steam launches.

THE MORRIS MACHINE WORKS of Baldwinsville, N. Y., have issued an illustrated catalogue describing a few of the various styles of engines built by them. They also make boilers of every description, and are the oldest and largest firm in the country engaged in the manufacture of centrifugal pumping machinery. Their line of vertical engines was introduced to meet the demand for an engine occupying the least possible floor space. They make a high-speed engine, especially adapted for electric lighting service, which can be belted direct to the dynamo. All parts of all the engines are made on the interchangeable system.

IN A PAMPHLET just received, the Woodruff Patent Mid-Slip Buoyant Screw Flange Propeller Company of 119 South Fourth street, Philadelphia, describe the advantages to be derived by placing the propellers at the sides of the vessel. The hull of the vessel has a longitudinal cove upon each side, in both of which coves are placed in the same line two separate hollow cylindrical propeller shafts, provided with journals to revolve in boxes, located on the axis of the longitudinal coves, securely held by shaft hangers depending and extending from the hull of the vessel. Upon each of the propeller shafts, on their inner ends, is placed a bevel gear cogged wheel, and upon a third shaft, placed at an angle of 90° to the line of the propeller shafts, is a bevel gear adapted to mesh with the cogged wheels upon the propeller shafts, thus mechanically connecting the propeller shafts with the third or driving shaft, which extends from the line of the propeller shafts to and through the side of the hull of the vessel, where it is connected with the motive power. The hollow cylindrical propeller shafts are each provided with two screw flanges, placed spirally around on opposite sides and equally inclined to the base of the propeller shafts. The third or driving shaft, by its bevel gear connection, revolves the two hollow cylindrical propeller shafts in opposite directions, consequently the inclination and pitch of the screw flanges on the two shafts in the same line are reversed. This arrangement is claimed to be more economical in power than that now common, and in addition permits of the perfect handling of the vessel by means of the screws, independently of the rudder.

Cement Mortars.

In a recent article in the *Revue de Génie Militaire*, M. R. Feret remarks that in making cement mortar the sand is usually measured while the cement is weighed. This plan has many advantages in practice, as the cement is received in bags or barrels ready weighed, while it would be difficult to weigh the sand. Nevertheless, the amount of sand determined in this way is somewhat variable, as it will be more if measured in a small number of large measures than in a greater number of smaller ones. Moreover, the quantity contained in a given measure varies with the dampness of the sand. If but slightly damp, the amount of sand in a measure will be decreased, as much as 20 per cent. in cases, when compared with the same sand measured dry. If, however, the sand is still further wetted, the reverse takes place, and the measure even contains still more sand than if measured dry, as the water brings about a compacting of the particles. The voids in a mass of sand vary with the regularity of the sizes of the grains. Were these perfectly uniform the voids in a mass of coarse sand would be of exactly the same volume as in a similar mass of fine sand; but as in practice the grains never are uniform, each particular sand has a certain percentage of voids peculiar to itself which one cannot do more than fill, no matter how large a proportion of cement is added in making the mortar. From the fact that natural sands are uniform, it follows that the many researches on the influence of the size of grain on the strength of a mortar have little practical bearing, as in such experiments the size of the grains is carefully calibrated by only using such as pass through one particular mesh and are arrested by a second finer mesh. The grains are thus rendered uniform in size and no longer correspond to natural sands. To further investigate the subject M. Feret has prepared artificial sands out of crushed quartzite. The sand as received from the crusher was graded into three degrees of fineness. The first consisted of such grains as would pass through a sieve containing four meshes to the square centimeter, and were retained on a sieve of 36 meshes per square centimeter. The second consisted of grains passing through a sieve of 36 meshes per square centimeter and retained in one of a much finer mesh, while the third consisted of the grains passing this last sieve. Measured dry, each of these samples had practically the same specific weight, No. 2 being slightly the lightest. Mixed in various proportions it was found the mixture having the highest specific weight was one consisting of six parts of the first sand and four of the third. This weighed 1686 kg. per cubic meter, or 30 per cent. more than No. 2.

The latest trust up to date is the National Trunk Company, with headquarters in Chicago, which proposes to monopolize the manufacture of trunks throughout the West. It includes all the big establishments in a dozen or more large cities and is capitalized for $2,500,000.

MANUFACTURING.

Iron and Steel.

The Shelby Steel Tube Company of Shelby, Ohio, manufacturers of cold-drawn seamless steel tubing, have decided to add $100,000 to their capital stock, and to increase their plant by the erection of two buildings and 30 benches, which will require when completed the employment of 300 additional hands. With this addition they will have 70 benches in operation, and a capacity of over 7,000,000 feet of tubing each year. With the contemplated increase the firm will purchase three more double engines and other machinery in proportion. The amount of power required will be in the neighborhood of 1600 horse-power, with batteries of eight boilers.

The Shelby Cycle Mfg. Company of Shelby, Ohio, have decided to engage in the manufacture of steel tubing in connection with the Shelby Steel Tube Company, and will abandon the manufacture of bicycles.

The contract for supplying the water pipes for Pittsburgh has been let to the National Foundry and Pipe Works, Limited, Scottdale, Pa. The pipe is to be from 4 to 12 inches in diameter, and about 1600 tons will be required.

The entire puddling department of the Eagle Rolling Mill Company at Ironton, Ohio, consisting of 15 puddling furnaces and one scrap furnace, went on double turn last week.

The Pittsburgh agency of the Babcock & Wilcox Company recently sent to the Wellston Furnace Company, at Wellston, Ohio, 200 horse-power improved safety water-tube boilers, arranged to burn furnace gas, and 500 horse-power boilers to the Norton Iron Works, Ashland, Ky.

The Beaver Falls mill of Carnegie, Phipps & Co. has come to the front again with an extraordinary run. During the month of March its production of rods was 5742 1676-2240 tons. This was produced in 48 single turns, the mill having lost two turns during the month. The production of any single day was not exceptionally large, but the product for the month eclipses anything heard of yet, so that the daily tonnage was uniformly large, which is in itself quite a gratifying achievement for the works. Joseph Wrigley is the superintendent under whom this remarkable run was accomplished.

A correspondent, writing from Hollidaysburg, Pa., to the Johnstown *Tribune*, says: "A notable piece of work is now in process of manufacture at McLanahan & Stone's foundry at Gaysport. Two massive ingot extractors, each of which will weigh 20 tons when completed, are being made for use in the steel converting department of the Cambria Iron Company, at Johnstown. A curious feature of the work is a hydraulic cylinder with a ram connection. This cylinder and ram are so large that an auxiliary cylinder and ram are attached to bring the former ram back into position after extracting the ingot from the mold. The bed plate for this hydraulic machinery weighs 12 tons. To show the strength needed to extract the ingots from the molds, two wrought-iron bolts, each 10 inches in diameter and 17 feet long, connect the bed plate and the hydraulic cylinders."

The Harris Forge and Rolling Mill Company of Irondale, Minn., have elected officers, as follows: President, Abraham Harris; vice-president, Mark Harris; secretary and treasurer, Abraham Goldman. The rolling mill of this company was built in 1890-91, and burnt out in 1891 after running a very short time. The works have been rebuilt and were again put in operation on March 1, 1892. They manufacture bar iron, axles, bolts, bridge rods and general forgings.

The plant of the Henderson Steel and Mfg. Company at North Birmingham, Ala., has been sold under a decree of the Chancery Court, foreclosing a mortgage held by the North Birmingham Land Company. The property was auctioned off to the highest bidder, and was purchased by Dr. Charles Dreuner for $4948.

The Paxton Rolling Mills, Harrisburg, Pa., are running to full capacity now, and have sufficient orders to keep their force of workmen employed for some time to come, whereas two months ago they were only working to 24 per cent. of their capacity. The McCormick Company are building a large new mill, with all the latest improvements, for rolling heavy plates, which is to work as an adjunct to the Paxton mills, and which will enable them to turn out 300 tons a day, greatly increasing their output, which does not at present exceed 50 tons. The mill is to have a set of rolls 34 inches in diameter and 132 inches long, and a powerful compound Corliss engine is to be put in with 28 and 54 inch cylinders and 5-foot stroke, built by Robert Wetherill & Co. of Chester, Pa. The new mill will be 521 feet in length, and it is expected that it will be in working order by the fall.

The York Rolling Mills, Stacey & Denney Company, at York, Pa., are now well employed turning out sheared skelp iron.

The Columbia Rolling Mill Company at Columbia, Pa., are making grooved skelp iron in large quantities, their works being in full operation.

The New Castle Tin Plate Company, organized some time since, have placed an order with the A. Garrison Foundry Company of Pittsburgh for a large lot of machinery. The contract includes the construction of the rolling mills, embracing three-high bar mills, with three-high pinions, and stand of full heads, one 20-inch mill with two stands of rolls, one train of cold rolls of three stands and a train of three 22-inch rolls with six stands. The contract calls for the completion of this machinery within four months. The main building will be 80 x 260 feet. In addition to this there will be a building for tinning and shipping, 52 x 200 feet in size, and also an annealing and pickling house. Some of the persons identified with the above concern are also connected with the Shenango Valley Steel Company, now erecting a Bessemer steel plant at New Castle. When the plant of the Shenango Valley Steel Company is completed they will furnish billets to the New Castle Tin Plate Company to be rolled into sheet bars. When completed this tin-plate plant will be one of the largest and best constructed plants in the country. They expect to have a capacity when in full operation of 1500 boxes per week.

Last week a meeting of the creditors of the Blandon Rolling Mill Company of Blandon, Pa., was held at that place, creditors representing about 50 per cent. of the liabilities of the firm being present. Plans were considered by which it was proposed to prevent the plant from being sold at a sacrifice. No definite action, however, was taken in the matter.

The present receiver of the Warren Tube Company of Warren, Ohio, will continue in that position, although he has made a final report to the court of funds received. There are yet a number of unpaid book accounts and unsatisfied judgments outstanding. In the settlement of the affairs of the concern, there were paid $35,300 mortgage indebtedness, and of the unsecured indebtedness of about $122,000, the creditors received over 67 per cent.

An inventory of the property and stock of Brown, Bonnell & Co., Youngstown, Ohio, is now being taken preparatory to the reorganization of that concern. It is expected that the entire plant will be shortly closed down in order to facilitate this work. The reorganization will be effected as soon as possible, when operations will be resumed on as extensive scale as heretofore. Considerable speculation is being indulged in as to who will be appointed to manage the affairs of this firm, but no definite announcement will be made for some time yet

Rosena Furnace, at Newcastle, Pa., which has been operated under lease for some years by the Oliver Iron and Steel Company of Pittsburgh, was blown out last week, the lease having expired and not being renewed. It is not known as yet whether the furnace will again resume operations, but it is probable that extensive repairs will be made on it before it is put in blast.

The materials for an iron mill to be erected in Chihuahua for Thomas Fletcher have been purchased in Pittsburgh, and American mechanics have gone forward who will erect 11 puddling furnaces, two scrap and two heating furnaces and put in 25 nail machines.

The Midvale Steel Company of Nicetown, Philadelphia, have issued a circular illustrating and describing the steel stem frame made by them for the United States cruiser No. 11, the Marblehead. The weight of the casting was 9213 pounds and the specifications of the Navy Department called for a tensile strength of 60,000 pounds per square inch and an elongation of 15 per cent. in the test bar ¾ inch in diameter by 2 inches between measuring points. The official test of the casting showed a tensile strength of 65,174 pounds per square inch, elongation 32.2 per cent. and contraction 48.73 per cent. The company state that they thus far exceeded the requirements of the Government, and they insist that the specifications should not be made less rigid to meet the views of other manufacturers of steel castings.

Justice Lathrop of the Supreme Court has ordered the Norway Steel and Iron Company of South Boston, Mass., dissolved on the petition of the stockholders. The plant has been idle for three years.

At the annual meeting of the Wellman Iron and Steel Company of Thurlow, Pa., recently, the following officers were elected: President, S. T. Wellman; vice-president, S. H. Chauvenet; secretary, Richard Peters, Jr.; treasurer, J. P. Crozer; superintendent, C. H. Wellman. The directors elected were: S. A. Crozer, S. T. Wellman, J. H. Converse, S. H. Chauvenet, J. P. Crozer, Richard Peters, Jr., William Burnham, F. E Weston, G. K. Crozer.

The plant of the Katahdin Iron Works, near Bangor, Maine, has been sold to the Pictou Charcoal Iron Company, of Pictou, N. S., and the machinery and equipment is being removed to that place. It had been idle since 1890.

No. 1 Ashland furnace, at Ashland, Ky., has blown out to be relined and to receive a new battery of boilers.

One of the furnaces of the De Bardeleben Coal and Iron Company at Oxmoor, Ala., is idle undergoing repairs.

The Corning Steel Company of Hammond, Ind., have begun the erection of their plant for the manufacture of steel plates and sheets. The main building will be 300 feet by 160 and the plant when competed will have a capacity of about 80 tons of sheets and plates per day. It is expected they will be in operation about the middle of August. Their address was erroneously given some time since in this paper as Peoria. The plant will be located at Hammond and their main office at 418 and 420 Phenix Building, Chicago.

John H. Leathers of Louisville, Ky., who is largely interested in the North Alabama Furnace, at Florence, Ala., recently inspected the plant and has decided to put more money in the enterprise and put the works in operation.

The preliminary arrangements have about been completed between Evell Eastman of Birmingham, Ala., and the Improvement and Furnace Company of Llano, Texas, for the erection of a 60-ton iron furnace at Llano.

All the pig iron in stock at the furnace of the Buena Vista Iron Company, Buena Vista, Va., aggregating 6000 tons, was sold last week to New York and Philadelphia parties, and is now being shipped.

The building of the new universal mill for rolling bridge plates and other heavy work, which has been undertaken by the Pennsylvania Steel Company, for the Central Iron and Steel Works, at Harrisburg, Pa, has been somewhat delayed by the unfavorable weather lately, but is now being pushed rapidly forward, and it is expected that the mill will be ready for work by July 1; the roof will shortly be fitted on and the rolls put in place. The entire building is of steel, and has a length of 360 feet, with corresponding width; it will be fitted with every improvement and will enable the company to greatly increase their output. The works are running to full capacity on double turn. Between 500 and 600 hands are employed in the Central Works and the Chesapeake Nail Works combined, which are practically one concern and adjoin each other on the Pennsylvania Railroad line. The latter works have a capacity of 300,000 kegs of nails a year, and are in full work at the present time.

The Wheeling Steel Company have been granted a charter of incorporation, with an authorized capital of $5,000,000, for the purpose of manufacturing iron and steel in its various forms. This new concern represents the consolidation of the Wheeling Iron and Nail Company, the Belmont Nail Works, the Benwood Iron Company and the Wheeling Steel Works, of which the firms named are joint owners. Preliminary to getting the charter all the stockholders of the old firms agreed to accept stock in the new company in lieu of their holdings at that time. Nothing beyond appointing a committee has yet been done, but a meeting of stockholders will be called in the near future, when the consolidation will go into effect and new directors be elected.

The National Tube Works Company of McKeesport, Pa., have been awarded the contract for the pipe of the new pipe line to the seaboard to be constructed by the Crescent Pipe Line Company. The line will be nearly 300 miles long, and will require about 5000 or 6000 tons of 5-inch pipe. Deliveries are now being made at different points along the line.

The Brown, Bonnell Iron Company of Youngstown, Ohio, have been granted a charter of incorporation, with a capital stock of $1,200,000, for the purpose of engaging in the manufacture of iron, steel and articles composed of such material, mining coal, iron ore, &c. The incorporators are Henry Tod, Chas. C. Baldwin, Jno. I. Williams, Robert McCurdy and Cecil D. Hine.

The Hainesworth Steel Company of Pittsburgh recently added to their equipment two 100 horse-power Babcock & Wilcox water-tube boilers. On the 11th inst. this firm turned out 250 tons of steel billets in 12 hours, and on the 14th inst. 458 tons in 24 hours.

The Trethewey Mfg. Company of Pittsburgh are increasing their forge department by the addition of new forge fires and iron furnaces, and are now prepared to forge either iron or

steel in all sizes, including steamboat shafts, &c. This firm recently built for the Hart-Cooley Mfg. Company of Chicago a mill for cold-rolling steel, which is fitted up with hardened forged-steel rolls 8 inches in diameter, with a 10-inch face.

Machinery.

The King Bridge Company of Cleveland, whose name until recently was the King Iron Bridge and Mfg. Company, last week secured a contract for the erection of the Illinois Central train shed, in connection with the new depot which that railroad is about to erect at Twelfth street, in Chicago. The structure will require some 800 tons of steel frame work. Advantage will be taken of the cantilever principle in the construction of the side sheds, avoiding the use of columns to support the outside portion of the roof. The central arch will have a span of 80 feet, and the side sheds will each be 30 feet wide, making the structure 140 feet wide in all and providing room for six tracks. The shed is to be completed by November 1.

The Kenwood Bridge Company of Chicago have secured the contract for the new train shed to be built by the Illinois Central Railroad at New Orleans. There will be 300 tons of iron and steel in this shed.

The plant of the Ætna Machine Company at Warren, Ohio, recently purchased by the Lloyd-Booth Company of Youngstown, Ohio, has been put in operation, The entire plant is not yet in good running order, but as soon as a few necessary repairs are made the works will be put on full time. For the present, tinplate machinery will be the principal output of the plant.

Last week the Totten & Hogg Iron and Steel Foundry of Pittsburgh received an order for one of the improved lathes recently designed by the firm, from the Ashland Steel Company of Ashland, Ky.

The Lodge & Davis Machine Tool Company of Cincinnati, Ohio, have just closed a $7000 contract with Northington Munger Pratt Company of Birmingham, Ala., for their improved machine tools to be used in the new shops of the latter company for the manufacture of cotton ginning machinery.

J. J. Larzalere, lately carrying on business at Muncy, Pa., has removed to Williamsport, Pa., and in conjunction with his son has there embarked in business under the title of Larzelere & Son as dealers in new and second hand engines, boilers, saw mills, shafting, feed mills, &c. They contemplate shortly erecting an engine plant and will commence manufacturing. Larzalere & Son are sole agents for A. B. Farquhar Company's machinery.

The Valley Iron Company of Williamsport, Pa., who had intended removing their manufactory of Valley automatic engines to Lynchburg, Va., have now decided upon remaining in their present quarters at Williamsport. Their machinery has been supplied over a very wide field, including India, China, Japan, Canada, Mexico and the West Indies.

At the last annual meeting of the stockholders of the June Mfg. Company of Belvidere, Ill., the name of the company was changed to National Sewing Machine Company. This change will not affect in any way contracts existing with the old company. The policy of the new company is to manufacture sewing machines of a superior quality only, and to maintain a high standard by constantly adding improvements. They have ample capital and claim the finest sewing machine plant in the West.

J. H. Horne & Sons Company of Lawrence, Mass., have decided to build a new machine shop 64 feet wide by 107 feet long, and have placed the contract for its erection with the Berlin Iron Bridge Company of East Berlin, Conn.

The Porter Boiler Mfg. Company of Chicago have secured a contract for the manufacture of boilers for the new pumping station to be built by that city for pumping sewage at Bridgeport. There are seven boilers in all, 18 feet in length by 66 inches in diameter, with full flues. There was an active competition for this contract among the various boiler makers. The company mentioned have now more work secured than they will be able to finish in the time specified in their various contracts, although the general run of business in the boiler trade is rather quiet locally. This company do a great deal of work for public improvements in small towns throughout the country, the building of water works being quite active at present.

Smith-Hill Foundry and Machine Company, Quincy, Ill., are erecting a large addition to their present machine shop. The addition will be 100 x 50 feet, two stories and basement. The company will also add the most improved machinery adapted to their line of business. They intend to put up a traveling crane and will also control their own electric light plant.

Albert L. Colburn, New Haven, Conn., advises us that the sale of his portable drilling machine has increased to such an extent that he has been obliged to increase his facilities for manufacture by the addition of new machinery.

The Lima Locomotive and Machine Company of Lima, Ohio, have been incorporated, with a capital stock of $300,000 to succeed the Lima Machine Works Company. The company have recently purchased the old Ohio Car Works plant, in South Lima, and are putting it into shape for operations. It is stated that two additional buildings will be added to the plant, one 60 x 300 feet and the other 50 x 200 feet, the former for use as a machine shop and for erecting locomotives.

The Seybold Machine Company of Cincinnati have purchased from Carnegie, Phipps & Co. the Columbia Bridge Works, located at Dayton, Ohio, and will at once improve the property, equip it with new and modern machinery, and permanently locate at that place.

The Waterbury Metal Bending Company, capitalized at $20,000, have been organized at Waterbury, Conn., to manufacture and sell machinery for the bending and shaping of metals.

The Colonial Mining Company, capital stock $300,000, have been organized at Portland, Maine, for the purpose of manufacturing and dealing in mining machinery.

L. F. Bellinger and M. Bellinger of Ilion, N. Y., will erect a foundry and machine shop at Tallapoosa, Ga.

The Sea Board and Air Line Railroad is preparing to erect large repair shops at Elberton, Ga.

H. J. Davis will erect a foundry and machine shop at Goodwater, Ala.

The Detroit Foundry and Equipment Company of Detroit, Mich., manufacturers of the Whiting patent cupola, recently built the largest cupola of this type ever constructed, the outside diameter of the blast chamber being 11 feet and the cupola with platform occupying a space 15 feet in diameter.

The Williamsport Machine Company, Williamsport, Pa., are making an addition to their machine shop which will make it one of the largest in the neighborhood, having a measurement of 450 x 55 feet. They have lately brought out a new 10-inch molding machine which is one of the largest of its class, also a single spindle shaper and a heavy door mortiser of improved designs, and they expect to have ready to put into the market before next year 14 entirely new wood-working machines of various kinds. The trade in wood-working machinery has been very brisk of late, and they are now 130 machines behindhand in their orders. The company are doing a considerable export trade, having recently made shipments to Australia, Japan, India and South America, besides supplying home demands.

Hardware.

The Miller Wire Spring Company of Bridgeport, Conn., have recently been incorporated, with a capital of $12,000, and the following officers: W. H. Warner, president; G. C. Edwards, secretary and treasurer; J. H. Miller, superintendent and manager. As soon as machines can be built the company will commence the manufacture of steel springs for all purposes.

It is announced that the entire plant of the Cleveland Axle Mfg. Company of Cleveland, Ohio, will be removed at an early date to Canton, Ohio, in consideration of a bonus of $25,000 and a free site.

The Bellaire Stamping Company, manufacturers of stamped ware, who recently removed their plant from Bellaire, Ohio, to Harvey, Ill., state that 25 of their most skilled employees went from Bellaire to Harvey on the 12th inst., and about 50 more will go during the present week. The firm expect to employ when in full operation about 350 hands. Their new location exceeds their most sanguine expectations as a manufacturing point, and the employees find excellent homes at Harvey, with the cost of living lower than it is in Ohio. The firm have erected a plant there that is worth $170,000, and is one of the finest of its kind in the country. They manufacture a line of center draft lamps that they claim are an improvement over anything on the market. Also a full line of enameled steel ware, a line of extra heavy American tinware, a line of ordinary stamped tinware; also seamless bread pans, lanterns, caps for Mason fruit jars, &c. The firm have relinquished their Ohio charter, and will organize under the laws of Illinois, increasing their capital stock to suit the lines they are bringing out.

The Scranton Axle Works, Scranton, Pa., have been organized with a capital of $150,000. The officers of the company are as follows: J M. Kemmerer, president; Thomas J. Moore, secretary, and E. H. Ripple, treasurer. These parties and W. L. Connell, W. A. Connell, W. J. Parmellee and S. S. Spruks constitute the Board of Directors. We are advised that the company have 5 acres of available land with excellent railroad facilities. They own all of the Parmellee patents for lessening the cost of manufacture of axles and expect to be making these goods for the fall trade.

Sutton Bros. & Bell, Indiana, Pa., are erecting a new building, 30 x 125 feet, which they hope will enable them to fill orders for their stump machines, land rollers, iron vases, cant and mill hooks, upsetters, swages, tire benders, sugar kettles, &c., more promptly.

Chattanooga Saw Works, Chattanooga, Tenn., have recently made additions to their works and put in several large lathes and a planer, thereby enabling them to do heavier work than they have heretofore been able to do.

The Jno. M. Waddel Mfg. Company, Greenfield, Ohio, report that they are very busy, employing about 100 hands. They are very much behind their orders for coffee mills and cash registers. The company have recently erected an addition to their main factory and the present plant is equivalent to about 30,000 feet of floor space. The company were incorporated December 31, 1891.

Kalamazoo Spring and Axle Company, Kalamazoo, Mich., are just erecting a building for another department, which will be known as the Kalamazoo Radiator Company, Kalamazoo Spring and Axle Company, proprietors. This department will be devoted to the manufacture of cast-iron steam and hot-water radiators, of which the company intend to make a full and complete line.

McCaffrey File Company, Philadelphia, have recently made an addition to their works by which their facilities are increased 50 per cent.

Owing to the large demand which they have had in their tinware department, we are advised that the Wyeth Hardware and Mfg. Company, St. Joseph, Mo., have been compelled to increase their facilities. They are accordingly erecting an addition to their plant, which will be 94 feet front by 140 feet deep, six stories high. A track will run through the building, which will be equipped with all modern improvements. The company hope to finish the building by June 1.

Miscellaneous.

The annual meeting of the stockholders of the Philadelphia Natural Gas Company of Pittsburgh will be held in that city on Monday, May 2.

On the 19th inst. the immense new works of the American Encaustic Tiling Company, at Zanesville, Ohio, were put in operation. It is claimed that this is the largest plant of the kind in the world, covering 40 acres of ground, and will give employment to about 1500 people.

Vallejo is a close competitor with Oakland and other points situated on the coast of California in her efforts to secure the Risdon Iron Works, who propose to shut down their present establishment in San Francisco and erect a more extensive one in some better location.

The Pittsburgh Locomotive Works have begun the erection of a new machine shop at their works, at Allegheny. It will be built of brick, with iron frame work, and will be 365 x 125 feet. They are also building a blacksmith shop, 365 x 100 feet, with an 80-foot wing, which will be used for a hammer shop.

The trustees of the New Hampshire College of Agriculture and Mechanic Arts have appropriated $20,000 for the building and equipment of a new machine shop.

The works of the Roanoke, Va., Mineral Wool Company are now in full operation, turning out about 10 tons of mineral wool per day.

The Pittsburgh Foundry Company have been organized at Pittsburgh, Texas, with a capital of $10,000. S. S. Morris is president, D. B. Abernathy secretary and J. R. Boyd treasurer.

J. H. Gill will erect a foundry and machine shop at Raleigh, N. C.

The contract for erecting the works at Middlesborough, Ky., for the South Boston Iron Works has been let to Waggoner & Gorenflo for $125,000, the work to be completed by October, 1892.

The Bridgeport, Ala., Stove Works made their first shipment of a carload of stoves last week on an order for the run of the plant for the year. This load went to New Orleans and others will rapidly follow

An enterprise to be known as the Jackson Iron Bridge Company will locate at Jackson, Mich. A structure, 160 x 110 feet, will be erected and employment will be given to about 75 men.

The Scranton Axle Works, capitalized at $150,000, have been incorporated at Scranton, Pa.

The American Fire Engine Company of Seneca Falls, N Y., are building a handsome hose carriage of special design for Palmyra, N. Y.

A strong vault has been added to the Marine Bank of Buffalo, N. Y., which is quite a mechanical wonder. The new vault is 25 by 12 feet, absolutely independent of the building. It is in fact a huge box of steel and brick work. The vault required in its construction 107 tons of steel. There is one lining or box of drill-proof chrome steel, and another of steel railroad rails interlocked. These rails weigh 52 tons. Thick masonry gives additional solidity to the walls, which are 25 inches thick in all. The floor and roof are as strong as the sides. The weight of the chrome steel box, which is inside that made of steel rails, is 32 tons. The doors are of remarkable ingenuity. Inside of all is a heavy brass gate. Next is a door weighing nearly 3 tons. Then comes a vestibule framed in solid metal, weighing 5 tons, next is the outer door, weighing 4 tons, and operated by clock work. Beyond this again there is steel grille work, weighing 3000 pounds, in which there is a heavy gate. Inside the vault there are 750 steel boxes. The vault was built by the Damon Safe and Iron Works Company of Boston.

The E. W. Ross Company, Springfield, Ohio, report us that the prospects for a large trade this season are excellent, and that they have commenced manufacturing two months earlier than usual, that they may be able to keep the supply up to the demand and make prompt shipments.

The Kentucky Fire Brick Company, Portsmouth, Ohio, report that they have just completed a fine and extensive plant in Kentucky for the manufacture of high-grade fire brick for blast-furnace and hot-blast stove purposes. Their Portsmouth works have been running for years upon the same class of work, and to meet the growing demand for their product they have built these new works right upon the raw material. The company state that all their brick at the new works are burned by gas producer, gas making a better grade of brick than ever, as the heats are under better control.

Whitman Agricultural Company, St. Louis, Mo., advise us that they are having a fine trade in baling presses, and shipping them to all parts of the world where fibrous materials are baled. During the past month they have made shipments to South America and Europe.

The Harlan & Hollingsworth Company have received a contract to build a 60-foot steel steamer for the New York House of Refuge.

In consequence of the glut of shipping on the Pacific Coast, to which point vessels were attracted from all quarters by the high freights prevailing there a few months ago, a fleet of clipper ships are coming around the Horn in ballast, to find cargoes in New York and Philadelphia.

A shipbuilding firm at Port Glasgow on Greenock have launched the sailing ship Maria Rickmers, 375 feet in length and claimed to be the largest vessel of her class in the world. An unusual feature is the triple-expansion machinery of sufficient power to drive her through calms and light winds at a speed of about 7 knots, by means of double-bladed feathering propeller, which will not interfere with the ship's steering when moving under sail alone.

A combination of California fruit growers are just carrying into effect arrangements for making direct shipments to Europe via New York, making use of refrigerators and lightering the fruit from the railroad to the steamship. Fruit growers in Florida will find that there are "foes worthy of their steel" as far off as the Pacific Coast.

TRADE REPORT.

The flurry in Foreign Ore is over. It is asserted by importers that not a cargo is now afloat unprovided for. Consumers could not expect such a streak of good luck for them to continue any length of time. Our cable report from London is very interesting this week. Bear operators by covering have advanced Pig Iron in leading British centers, Pig Tin has been active at an advance of £1, the Landore Tin Plate Company of Swansea, owning seven mills, have suspended, and three Welsh Tin Plate firms are stated to contemplate erecting works in this country. The domestic Iron trade continues gloomy and depressed. Chicago and Detroit are the only markets in which Pig Iron has been at all active. Pittsburgh reports that the movement to shut down furnaces has come to a stop, and it is now given out that furnacemen making Mill Iron have an understanding to hold the price at $13. A sale of Bessemer Pig is reported at $13.75 at furnace in the Wheeling district. A large order of domestic Ferro is reported taken at $61, Pittsburgh, an exceptionally low price. Billets are weak, with no sales of importance except near Philadelphia, where it is rumored that large contracts have quietly been made below $25, delivered. A heavy business has been done at Pittsburgh in structural Material, Wrought Pipe, Barb Wire and Plates, but at very low prices. Carnegie's new Beam mill, the finest in the country, was put in operation on Monday. Wire Rods are firmer, with the Joliet Mill still out of the market, being repaired. Amalgamated Association officials are now at work on new wages scales for the coming year, but as yet it is not known whether they will voluntarily make reductions. Chicago reports large orders in sight for manufactured Iron and Steel and better business in Steel Rails. An unusually heavy trade in Barb Wire is reported at St. Louis, stimulated by cut freight rates to Texas, which are to be restored May 9. The Ore trade at Cleveland has not yet opened up actively, but vessel charters are being made at low rates and furnacemen are probably able to shade last year's prices on such purchases of Ore as they are making. The shipping season will begin with the docks well cleaned up. In metals the general tendency is upward. The demand for Copper has moderated, but prices are fairly firm Pig Tin is higher, and the consumption by domestic Tin Plate makers is being felt in the increased volume of business. Pig Lead is higher and more active. The purchases of Spelter "for export" have been sold here instead of abroad, but prices have advanced in the face of the resales.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, April 26, 1892.

There has been no change in the general situation of the Iron and Steel trades since our report of last week. Buying continues to be confined to small lots and prices do not show any improvement. In some lines of finished material the demand is exceedingly good, but prices are not satisfactory by any means. This heavy demand applies to Structural Material, Barb Wire and Steel Plates. The other materials show the same condition as noted for some weeks past. As a whole, the situation does not show any improvement, and the prospects for the future are far from being good.

Pig Iron.—The past week is a repetition of the past three or four weeks, and transactions taking place continue to represent lots running from 100 to 500 tons. As a rule the furnaces do not seem anxious to book orders at the low prices now ruling, and, on the other hand, buyers are just as indifferent about placing orders and do not seem to feel that they are running any risk by delaying the placing of orders. Since our report of last week lake navigation has opened, and carrying rates on ore are at very favorable figures for the furnace operators, which is expected to operate against any stiffening in prices. The shut-down movement has come to a stop, and the present attitude of the furnacemen indicates that they intend to keep their stacks going. Rosena Furnace, in the Shenango Valley, operated for some years under lease by the Oliver Iron and Steel Company of this city, has been closed down, the lease having expired. The Claire Furnace Company, Limited, at Sharpsville, have placed an order for four Massick & Crooke's hot blast stoves. It is given out here that the furnaces making mill Iron have arrived at an understanding and are refusing to accept business at less than $13. Some of our furnaces making Bessemer Iron absolutely refuse to book orders at less than $14 50, and say they will pile their Iron before they will accept less than that figure. As some of them are pretty well sold up, they are able to take this stand and maintain it. Other furnaces not so well fixed are compelled to market their output and get the best prices they can for it. In the absence of any large transactions on which to base prices, we quote the market as follows :

Neutral Gray Forge	$12.75	@ $13.00,	cash
White and Mottled	12.50	@ 13.00,	"
All-Ore Mill	13.25	@ 13.50,	"
No. 1 Foundry	14.75	@ 15.00,	"
No. 2 Foundry	14.00	@ 14 25,	"
Bessemer Iron	14 35	@ 14.50,	"
Warm-Blast Charcoal	18.50	@ 20 00,	"
Cold-Blast Charcoal	25.00	@ 27.00,	"

We note a sale of 3000 tons of Bessemer Iron, made by a furnace in the Wheeling district, at $13 75, at the furnace, the freight rate being 60¢, with equal deliveries for April and May.

Ferromanganese.—The market does not show any change, domestic still ruling at $62 50. It is stated on good authority that domestic has been sold in this market as low as $61, but the order was a large one, and the low price was made in order to shut out the foreign article. For small lots and prompt shipments $62.50 is obtained for domestic.

Soft Steel Billets.—The volume of business continues very small, and prices show a tendency to weaken. Of the four mills in Pittsburgh proper three of them are said to have enough business booked to keep them running full until July 1 next. The mills in the Wheeling district are also said to be moderately well off with orders In less than two months from now the Amalgamated Association scales will be ready for the signatures of the manu-

facturers, and this is given as the reason why makers are not anxious to book orders for delivery later than July 1. We are not advised of any sales out of the ordinary since our last report, and quote the market at $22 75 @ $23, with the last named as the ruling figure.

Muck Bar.—The remarks of last week under this heading apply equally as well this week. There is very little Muck Bar changing hands, and what little is sold brings $25 delivered to buyer. Two deals involving about 1000 tons are hanging fire and may be closed during this week.

Structural Material.—A very good tonnage is reported, and while no orders of unusual size are being placed, there is a fair business being done, with every indication of an increased demand in the near future. The opening up of the building season has not brought orders forward as freely as was expected, but, as stated above, makers look for the demand to grow right along. On Monday, the 25th inst., the new 35-inch Beam mill of Carnegie, Phipps & Co., Limited, at Homestead, Pa., was put in operation. This is undoubtedly the best equipped structural mill in the country, and will add considerably to the capacity of this firm for turning out structural material of all kinds, and will make them much the largest producers of Shapes in this country. We quote prices as follows: Beams and Channels on a basis of 2¢ for desirable orders and 2.10¢ small lots; Angles 1.85¢ @ 1.90¢; Universal Mill Plates, Iron, 1.85¢ @ 1 95¢; Universal Mill Plates, Steel, 1.80¢ @ 1 90¢; Tees, 2.50¢; Refined Iron Bars, 1.75¢; Steel Bars, 1.75¢.

Wire Rods—The long stoppage of the Joliet mill of the Illinois Steel Company has brought a number of good orders to Pittsburgh, and it is understood that the above firm have recently entered the market as buyers. Since our report of last week, Rods are considerably firmer; one maker states that he will not accept business at less than $32.50, at mill. It is altogether likely, though, that desirable orders could be placed at from 25¢ to 50¢ less than the above price.

Steel Plates—There is no change to note since our report of last week. While the mills are not crowded with orders, they have enough to do to keep them moderately busy, and a very fair amount of orders are being received right along. We repeat our quotations of last week as follows: Fire Box, 3.50¢ @ 4¢; Flange, 2.20¢ @ 2.30¢; Shell, 2.10¢; Tank, 1.90¢.

Merchant Steel.—As a rule the mills are all fairly busy and business seems to be increasing. The demand for the cheaper grades of Steel is good, while prices do not show any change. The reputation of Pittsburgh Tool Steel is such that we make regular shipments abroad, where it is used in preference to the best makes of English Steel. We quote as follows: Tool Steel from 6½¢ upward, according to grade, and Bessemer Machinery and Tire Steel from 2¢ up to 2.40¢, according to quality.

Steel Rails.—The market is quiet, and we are not advised of any large orders placed here for some time. Railroads are holding back their orders until after semi-annual dividend time when it is expected that some fair-sized blocks will be placed. Our local mills have enough orders booked to run them full up to July 1, next. Prices are unchanged at $30, f.o.b. at mills.

Wire and Cut Nails.—An excellent business is being done in Wire Nails, and several of our mills are practically out of the market, as their order books are full and they are unable to book orders for delivery before July next. Prices are unchanged, and we quote at $1.65 in carload lots and $1.70 @ $1 75 less quantities. There is also a fair demand for Cut Nails, though not as good as for Wire Nails. Prices are unchanged, and we quote $1.50 fo 30¢ averages, f.o.b. in Wheeling district.

Manufactured Iron.—There is no change to note in the situation since our last report. The makers do not seem anxious to book orders for delivery later than June, for the reason that the Amalgamated scale will be up for settlement in that month, and unless all signs fail, a liberal reduction must be made in wages or there will be a strike. Should a shut down occur, mills who have cleaned up their orders will be in much better shape to stand a siege of idleness than those who have orders that must be filled. The Amalgamated Association officials are already at work on the scale to be presented to the convention, which meets in this city in June, but as yet no intimation has been given out as to whether the officials of that organization will agree to accept the situation as it is, and voluntarily make considerable reductions on the scale now in force, or whether they will make demands which our manufacturers cannot accede to and thus bring on a struggle which can only have one outcome. Pittsburgh cannot continue to pay $5.50 for boiling, against $3.25 in the East, and the Amalgamated officials will do well to bear this fact in mind. We quote prices as follows: No. 1 Bars at 1.60¢, 60 days, 2 % off for cash; Bars made from Old Rails at 1.47½¢ @ 1.50¢; Steel Sheared Plates, $1.85¢ @ 1.95¢; Iron Sheared Plates at 1.80¢ @ 1.90¢; No. 24 Sheet at 2.50¢ @ 2.60¢, 60 days, 2 % off for cash. Skelp Iron is unchanged at 1.60¢ for Grooved and 1.80¢ for Sheared, four months, 2 % off for cash.

Barb Wire.—As an indication of how busy the Wire mills are, we are advised that an order for 550 tons was offered recently to half a dozen mills, and none of them would accept it for delivery within the next three months. An advance in prices within a short time is probable, on account of the heavy demand. We quote as follows: $2.25 and $2 30 for Painted, and $2.70 and $2 80 for Galvanized, f.o.b. at factory, the lower prices named being for carload lots.

Wrought Iron Pipe.—Within the past two weeks some very large orders have been placed, and, as a consequence, makers are feeling better than for a long time past. One of these orders was for an 8 inch gas line, to be laid from the natural-gas fields in Indiana to the city of Chicago. A good many hundred tons will be needed, and the order was shared by the National Tube Works Company, American Tube and Iron Company and one or two other concerns. The National Tube Works Company have also received a contract for the Pipe of the new pipe line to the seaboard to be constructed by the Crescent Pipe Line Company. About 5000 tons of 5-inch Pipe will be needed. Prices, however, do not show much improvement, and it is understood that the above business was booked at exceedingly low figures. Discounts are as follows: Butt, Black, 57½ %; Galvanized, 47½ %; Lap, Black, 67½ %; Galvanized, 55 %; Boiler Tubes, up to 2½ inch inclusive, 55 %; 3-inches and larger, 65 %; Casing, 55 %; Inserted Joint Casing, 50 %. These discounts continue to be shaded considerably.

Scrap Iron and Steel.—There is no improvement to note either in demand or in prices, and we do not hear of any transactions of note since our report of last week. It has been a long time since the Scrap business was in such bad shape as it is in at present. We quote as follows: No. 1 Railroad Wrought Scrap, $17 ℔ net ton; Cast Scrap, $12.25 @ $12.50 ℔ gross ton; Billet and Bloom Ends, $16 75 @ $17; Cast-Iron Borings, $9 @ $9 25 ℔ gross ton; Mixed Country Steel, $14 ℔ gross ton; Railroad Coil Springs, $18 @ $18.25 ℔ gross ton; Leaf Springs, $20.50 ℔ gross ton.

Old Rails.—The market for Old Rails, both in Iron and Steel, is in the same condition as the Scrap market. Prices fluctuate so much that dealers seem afraid to do business. Buyers do not accept the low prices offered by sellers, and as a result there is nothing doing, and the outlook for the future is by no means bright. We make nominal quotations as follows: Short lengths under 6 feet which do not require sorting, at $16. Miscellaneous lengths are held at $15.50 and long lengths $16.25 @ $16 50. Old Iron Rails may be quoted at $21, delivered in the Mahoning Valley.

Railway Track Supplies.—A good demand is going and the outlook for the future is excellent. Some of our mills have enough orders on hand to keep them running full until July 1 next. Prices are unchanged and we quote as follows: Spikes of standard size, 2.15¢, 30 days; Iron Splice Bars, standard sections, 1.75¢ @ 1.80¢; Steel Splice Bars, 1 80¢ @ 1.90¢; Track Bolts, 2.70¢ with Square and 2.80¢ with Hexagon Nuts.

McClure & Amsler, engineers and contractors, Pittsburgh, Pa., have received a contract from the Claire Furnace Company, Limited, Sharpsville, Pa., for four Massicks & Crooke's hot-blast stoves, 18 x 65 feet in size. The competition for the obtaining of this order was very keen, but after a thorough examination of the different types of hot-blast stoves in the market, the order was placed with the above firm. In this connection it may be of interest to state that the Illinois Steel Company have in use 29 Massicks & Crooke's hot-blast stoves at their different blast furnace plants.

Jones & Laughlins, Limited, proprietors of the American Iron and Steel Works and the Eliza furnaces at Pittsburgh, have commenced the erection of a large number of coke ovens, which will be built adjacent to their blast furnace plant in that city.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 50 Dearborn street, CHICAGO, April 27, 1892.

Pig Iron.—The improvement in the demand noted last week was a little more pronounced during the last few days. Buyers of Charcoal and Coke Iron have been offering to place orders for eight months' and a year's supply at prevailing prices, which indicates that they do not look for lower figures, whatever their opinion may be in regard to an advance. Sellers are willing to dispose of almost any quantity at the market price for immediate shipment, but contracts for long time deliveries are persistently declined. Southern Foundry shares in the increased demand, though it is likely that sellers are not quite so firm in price or particular as to the length of time the deliveries cover. Several sales are reported at a slight decline from previous quotations and large blocks could be sold for extended delivery at a shade under to-day's prices. Southern Soft Irons appear to be afflicted with the severest case of weakness in this market, where the whole line of Crude Irons are suffering from extreme debility on immediate business. A careful simmering down of the existing conditions suggests nothing more tangible than a weak undercurrent that better prices must result if the prospective de-

mand materializes to the full extent that is anticipated. We make the following quotations, cash, f.o.b. Chicago, prompt shipment:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	14.50 @ 15.00
Local Coke Foundry, No. 2	14.00 @ 14.50
Local Coke Foundry, No. 3	13.50 @ 14.00
Local Scotch	15.00 @ 16.00
Ohio Strong Softeners	16 50 @ 17.25
Southern Coke, No. 1	15 00 @ 15.50
Southern Coke, No. 2	14.00 @ 14.50
Southern Coke, No. 3	13 25 @ 13.75
Southern, No. 1, Soft	13.75 @ 14.25
Southern, No. 2, Soft	13 25 @ 13.75
Southern Gray Forge	13 00 @ 13.25
Southern Mottled	13.00 @ 13.50
Tennessee Charcoal, No 1	17.50 @ 18.00
Alabama Car Wheel	21.00 @ 23.00
Coke Bessemer	15 50 @ 16 00
Hocking Valley, No. 1	17.00 @ 17.50
Jackson County Silvery	17.00 @ 17.50

Bar Iron.—There is only a small trade doing at the present time, but some encouragement is taken from several large specifications that will shortly be distributed for bids. It is said one order alone will embrace some 7000 tons of Iron and Steel, and several others of smaller quantity aggregating about 10,000 tons that are in sight. With such orders in hand makers can be more independent in price, and thus lessen competition, which has reduced prices to a point where margins of profit are close to the cost mark. The demand from jobbing trade is very light and of the carload mixed size character. Open quotations are 1.57½¢ @ 1.62½¢, half extras. On car specifications, guaranteed tensile strength, 1.65¢ is the asking price. Soft Steel Bars are a little weaker, in sympathy with Iron Bars. Quotations on desirable business are made at 1.75¢, and some of the makers decline to shade this figure. From store prices range from 1.90¢ to 2¢.

Structural Shapes.—The demand for building material is very fair in the city, but orders from outside territory are not in keeping with the season. Bridge shapes are in better request and business improving. There is considerable uncertainty about the price of Beams and Channels. Quotations are made at 2.15¢, though there is good reason to believe that 2.10¢ would be accepted by some makers. From stock 2.50¢ is asked on small lots. Angles from mill are quoted at 1.85¢ @ 1.90¢; Tees, 2.25¢; Universal Plates, 2¢, and Sheared Plates, 1.95¢. An average price of 1.92½¢ is frequently made on round lots of Angles, Universal Plates and Sheared Plates when there is something like equal tonnage. Quotations from stocks on hand are: Angles, 2¢ @ 2.15¢; Tees, 2.40¢ @ 2.60¢.

Plates, Tubes, &c.—Nothing has occurred that changes the condition of this line of material from what it has been for some weeks past. Prospects for better trade on Plates are excellent, if inquiries are an indication. The small trade from store is somewhat disturbed by the proposed strike of the boilermakers May 1. They are demanding an advance in wages and a nine hour day. Dealers report a steady demand for Tubes and firm market. Information from other sources is to the effect that manufacturers' prices are weaker. We make no change in the following quotations from stock, but good buyers will probably be able to shade them on Tank Steel and Iron: Tank Iron, 2 40¢ @ 2.50¢: Tank Steel, 2.30¢ @ 2.40¢; No. 10 to No. 14 Iron or Steel Sheets, 2.40¢ @ 2.50¢; Flange Steel, 2.90¢ @ 3¢; Shell Steel, 2.60¢ @ 2.75¢; Rivets, 4¢ @ 4.25¢; Boiler Tubes 3 inch and larger, 70 %; 2¼ inch and less, 55 % off; Tank Steel in mill shipments is quoted 2¢ @ 2.10¢.

Sheets.—There is a big demand for Black Sheets, and mills are quite firm in price and unable to meet the delivery required. No. 27 is quoted at 2.85¢ at mill and at 3¢ out of store. Heavy buyers could shade the mill price when deliveries are suitable. Galvanized Iron is less active, and Juniata quoted at 70 % and 5 % off on mill shipments, and at 67½ and 2½ % off from store.

Merchant Steel.—Immediate business is quiet and in small lots only. The inquiries for next season's delivery from implement makers are coming in very freely for the season, and it now looks as though contracts would be made much earlier than usual. On such orders higher prices are asked in some cases than was paid a year ago. Special Tool Steels are in fair request, and range in price from 8¢ to 13¢. Machinery, Spring and Tire Steels are quoted at 2¢ @ 2.25c, according to quality.

Rails and Track Supplies.—The demand for prices on Rails for near-by delivery has materially increased in the past week. Orders are still restrained by the figures named, which are not satisfactory to the buyers, and yet it would seem to longer withhold will not reduce the price. Quotations range from $31.50 to $32 on the general run of business, while large blocks for later delivery could be bought for $31. Iron and Steel Splice Bars are quoted at 1.70¢ @ 1.72½¢; Spikes, 2.10¢ @ 2.15¢, and Hexagon Nut Track Bolts at 2.65¢ and Square at 2.55¢.

Old Rails and Wheels.—There has been very little doing in the Old Rail market. Prices have sagged off and a nominal quotation would now be $19 @ $19.50. Stocks in sight are light, and upon the other hand there seems to be no urgent demand. No transactions have been noted in Old Steel Rails and prices continue at about $13.50 @ $14. There have been a few inquiries for small lots of Old Wheels at a much lower price than present market quotations. Those who have Wheels to sell are asking from $15 @ $15.25.

Scrap.—There is no demand of consequence from consumers. Railroad stocks have been accumulating, and many of the holders are offering various grades at lower prices than have prevailed for some time. Dealers make the following quotations per net ton, f.o.b. Chicago: No. 1 Railroad, $17; No. 1 Forge, $16; No. 1 Mill, $10.50; Pipes, $10; Cast Borings, $6 75; Wrought Turnings, $9; Axle Turnings, $11.50; Heavy Cast, $11.50; Stove Plate, $9; Malleable Cast, $10; Horse Shoes, $17; Fish Plates, $18.75; Mixed Steel, gross ton, $10.50 @ $11; Coil Steel, $15; Leaf Steel, $16.

Metals.—There appears to be more strength in the Copper market. While quotations have not advanced, prices are held more firmly. Carload lots of Lake are quoted at 12½¢ @ 12¼¢; casting brands, 11.75¢. Spelter has advanced to 4.70¢, and the market reported strong. There has been a fair inquiry for Pig Lead and sales of some 900 tons are reported at prices ranging from 4½¢ at 4.15¢. This price cannot be made on anything less than 100-ton lots. Smaller quantities are quoted at 4.35¢, and in single tons 4.40¢ would be as low a price as could be obtained.

Philadelphia.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Pa., April 26, 1892.

The week under review has developed nothing specially encouraging, and in all leading features the market is as dull and uninteresting as ever. The general impression is that no material change is likely to occur until after midsummer, although the improved demand which should be met with during May and June will probably tend to check further decline in prices. This is not a very cheering prospect after the bright hopes that were indulged in during the closing months of last year, but from recent developments it appears to be all that can be expected, although if anything more favorable should occur it will be promptly noted.

Pig Iron.—General dullness appears to be the ruling characteristic of the trade. A considerable business is being done in the aggregate, but sellers find it more difficult to place 50 or 100 tons satisfactorily than it was to place ten times that amount a few years ago, There are more brands, more sources of supply, and besides ordinary competition there is special competition for certain deliveries, and, after all very little more Iron is sold by those who do the real hard work than when consumption was not more than half what it is to-day. The Mill Iron trade is practically a thing of the past, as all the large plate and structural mills run so largely on Steel that they are either making their own pig metal or buying Billets from those who make their own Pig. Then as regards the foundry trade, matters are equally unsatisfactory. Southern competition cuts severely into the New England trade, as well as into Baltimore and intermediate points. Local furnaces manage to get rid of their product and live, but selling Iron in times like these is no picnic, and if it were not that "hope springs eternal in the human breast," three-fourths of those who are engaged in the business would abandon it forever. This is not a very cheerful statement to make, but it is in accordance with facts. As regards prices realized during the past few days, there has not only been no improvement, but owing to lower freights from the South, sellers are again making concessions. It appears, therefore, that the 25¢ allowance made by the railways is of no advantage to the seller, except so far as it knocks out "the other fellow," who in the ordinary course of events will have his turn later on. Quotations are in ordinary cases about as given herewith for Philadelphia, and near-by deliveries, with the usual reduction on Southern Irons on such markets as Harrisburg, York, Baltimore, &c.

American Scotch, No. 1x	$17.00 @ $17.50
American Scotch, No. 2x	16.00 @ 16.50
Standard Penna (Lake Ore), No. 1x	16.00 @ 16.50
Standard Penna. (Lake Ore), No. 2x	15.00 @ 15.50
Standard Penna. (Lake Ore), No. 2 plain	14.00 @ 14.50
Lehigh and Schuylkill, No. 1x	15.50 @ 15.75
Lehigh and Schuylkill, No. 2x	14.75 @ 15.00
Standard Virginia, No. 1x	15.00 @ 15.50
Standard Virginia, No. 2x	14.50 @ 14.75
Medium Va. and Southern, No. 1x	15.00 @ 15.25
Medium Va. and Southern, No. 2x	14.00 @ 14.25
Standard Penna. and Virginia Forge	14.00 @ 14.50
Ordinary Forge	13.00 @ 13.25
Hot-Blast Charcoal	18.50 @ 21.00
Cold-Blast Charcoal	24.00 @ 26.00

Steel Billets.—There is an uneasy feeling among sellers, and prices are understood to be weaker, but in the absence of ordinary transactions prices are more or less a matter of opinion. Some large sales are said to have been made *sub rosa* at less than $25 delivered to mills nearby, and small lots at $25.50, but 500 and 1000 ton buyers appear to be out of the market, although $25 @ $25.25 would probably be accepted for such lots on firm offers from good parties, with corresponding prices for Susquehanna Valley, say $24.75 @ $25.

Steel Rails.—There is no business to report beyond the usual run of small orders at unchanged prices. Requirements of some leading roads are likely to be considerable, but from present appearances buying will be of the same hand-to-mouth character as during the past six or eight months. Prices are not likely to be higher, and as manufacturers will not let them do vn, buyers consider that there is nothing to be gained by placing orders in advance of their needs

Muck Bars.—There is some inquiry from large buyers, but bids are not much over $24.50, delivered, for 6-inch Bars, although sales at about a dollar higher are reported for 3-inch. Consumption is not

large, and as stocks have accumulated, it is difficult to find a market at satisfactory prices.

Bar Iron.—There is so little change that the same report as made for several weeks past would be equally correct to-day. As a rule prices are weak and the demand very much less than the supply, although some mills manage to run moderately full at fair prices. The majority, however, have to skirmish around pretty lively to get anything worth while, and even then it must be at very low prices. Some mills quote 1.60¢ @ 1.65¢, f.o.b. at interior points; others 1.70¢ @ 1.75¢ for city deliveries, but there is a great deal of what is claimed to be good Iron at much lower prices than these. Still, Bars of the best makes are comparatively steady at outside figures.

Plates.—There is no improvement in either prices or demand. Western mills compete in a way that shows they intend to get business regardless of price. They have been successful in securing a few fair-sized orders, but it is presumed that they will have to make still deeper cuts in any new business that may be offered. Local mills are in a position to take care of all the business hereabouts and are not likely to surrender it without a struggle. Meanwhile the amount on the market is so trifling that it seems ridiculous to slash prices as they have been doing during the past two or three weeks. Quotations under such conditions cannot be given with much exactness, but ordinarily asking figures are about as follows:

	Iron	Steel.
Tank Plates	1.80 @ 1.90¢	1.80 @ 1.90¢
Shell		2.10 @ 2.20¢
Flange	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire-Box	3.00 @ 4.00¢	2.60 @ 2.80¢

Structural Material. — There is very little interest to report in this department. New work comes in slowly and in small lots, so that the mills are not so well employed as they should be at this season, although the usual hopes and expectations are indulged in. Prices are very weak, however, and in Angles especially some very low figures have been quoted, although nominally prices are supposed to be about as follows: From 1.85¢ to 1.95¢, delivered, for Bridge Plates; 1.85¢ @ 1.90¢ for Angles, and 2.20¢ @ 2.30¢ for Beams, Channels or Tees.

Sheet Iron.—The demand for Sheets is reported to be fairly satisfactory, for which prices are steady. There are very low figures quoted for other descriptions, however, which appear to be in large supply. For best makes prices are about as follows:

Best Refined, Nos. 14 to 20	2.70¢ @ 2.80¢
Best Refined, Nos. 21 to 24	@ 3.10¢
Best Refined, Nos. 25 to 26	3.20¢ @ 3.25¢
Best Refined, No. 27	3.40¢ @ ....
Best Refined, No. 28	3.50¢ @ ....

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ¼¢ lower than are here named:

Best Soft Steel, Nos. 14 to 20	3¢ @ 3⅛¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ ....
Best Soft Steel, Nos. 25 to 26	3¾¢ @ ....
Best Soft Steel, Nos. 27 to 28	4¢ @ ....

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount	@ 67½ %
Common, discount	@ 70 %

Old Material. — It seems impossible to market lots of any considerable size unless at some concession in prices. For such quantities and qualities as buyers require, sales are made at about the following figures: Iron Rails, $20 asked, spot, or $21, delivered; Steel Rails, $16 @ $16.50, delivered; No. 1 Railroad Scrap, $18 @ $19, Philadelphia, or for deliveries at mills in the interior $18.50 @ $19, according to distance and quality; $13 @ $14 for No. 2 Light; $13 @ $14 for best Machinery Scrap; $13 @ $14 for Wrought Turnings; $9 @ $10 for Cast Borings, and nominally $22 @ $24 for Old Fish Plates, and $16 @ $16.50, delivered, for Old Car Wheels.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, April 27, 1892.

The market the past week has offered no new features. Trade has only been moderate, consumers buying mainly for immediate needs. There have been no large or important sales, most of the purchases being small lots. There seems to be no great disposition on the part of large consumers to place round lot orders at present prices. They see no reason to fear an increase in prices; in fact, most of them seem to be of the opinion that because Iron has gone down so long it will continue to drop. There appears to be among furnaces, however, a more or less determined disposition to make no more concessions. Furnacemen in view of the curtailment of production and the rumors of what great consolidations may affect seem to believe that the time has come to make a stand. A few of the best posted men in the trade think that prices must be worse before they can be better, but the majority think the prices have at last reached a temporary resting place, and that for some time the Iron trade will remain in *statu quo*, finally improving. With opinions so divided it is hard to reach any definite conclusion. Quotations are as follows:

Foundry.	
Southern Coke, No. 1	$13.75 @ $14.00
Southern Coke, No. 2	13.00 @ 13.25
Southern Coke, No. 3	12.25 @ 12.50
Ohio Soft Stone Coal, No. 1	16.00 @ 16.50
Ohio Soft Stone Coal, No. 2	15.00 @ 15.50
Mahoning and Shenango Valley	17.00 @ 17.50
Hanging Rock Charcoal, No. 1	19.75 @ 20.00
Hanging Rock Charcoal, No. 2	19.00 @ 20.00
Tennessee and Alabama Charcoal, No. 1	16.50 @ 17.00
Tennessee and Alabama Charcoal, No. 2	15.50 @ 16.00
Forge.	
Gray Forge	11.75 @ 12.00
Mottled Neutral Coke	11.25 @ 11.50
Car Wheel and Malleable Irons.	
Standard Southern Car Wheel	19.25 @ 19.50
Lake Superior Car Wheel and Malleable	18.75 @ 19.00

St. Louis.

Office of *The Iron Age*, Bank of Commerce Building, ST. LOUIS, April 25, 1892.

Pig Iron.—The market has not been very active during the past week. Prices are fairly steady, but in some cases are shaded to a point which means an absolute loss to the furnace, unless they are unusually well fixed for Coal, Ore, transportation, &c. Buying is limited to small quantities, and it seems impossible to interest large consumers in the market to the extent of purchasing beyond 500-ton lots. Sales of No. 2 Foundry are reported at $13.50, delivered in buyer's yard here, four months' time. For brands that have any reputation whatever this is a low price, and the consumer who takes advantage of it will not likely regret the purchase. A peculiar phase of the market is the fact that buyers are as much at sea regarding prices as sellers are. Prices have gradually dwindled, until they have now reached a point which six months ago would have seemed improbable. Notwithstanding the decline consumers are looking for even lower prices, and sellers have been much discouraged thereby. Notwithstanding this condition of affairs, furnaces are still shading their competitors' prices, and the consumer is standing by waiting for bargains which may come his way almost without the asking. Those who are considered to be well informed predict a turn in the market about July or August, and think that prices have now reached the lowest point. Sales during the past week, as stated above, have been light and generally at about the figures quoted herewith, which are for cash, f. o. b. St. Louis.

Southern Coke, No. 1 Foundry,	$14.25 @ $14.50
Southern Coke, No. 2 Foundry,	13.50 @ 14.00
Southern Coke, No. 3 Foundry,	12.75 @ 13.25
Gray Forge	12.50 @ 12.75
Southern Charcoal, No. 1 Foundry	16.50 @ 17.00
Southern Charcoal, No. 2 Foundry	15.75 @ 16.25
Missouri Charcoal, No. 1 Foundry	14.75 @ 15.25
Missouri Charcoal, No. 2 Foundry	14.25 @ 14.50
Ohio Softeners	17.25 @ 17.50

Bar Iron.—There is not much of a change to note in this department. Mills are kept fairly busy, but prices do not show any increasing strength. Jobbers report only a moderate demand and quote 1.65¢ @ 1.70¢, according to the size of the order, Mills quote 1.60¢, half extras, f.o.b. cars East S. Louis.

Barb Wire.—There does not appear to be any let up in the demand. This is particularly so as regards the Texas trade, which is just now unusually heavy. This is accounted for by the fact that the freight rates have been restored, to go into effect May 9. Dealers in that locality are anxious to get in at the present rate of 18½¢, and mills are consequenaly rushed with orders. Prices do not improve, however, and are quoted as before: Car lots of Painted, $2.40 @ $2.45; Galvanized, $2.85 @ $2.90; less than car lots 10¢ ℔ cwt. additional.

Wire Nails.—These is no improvement in the demand, and mills continue to stock up their product. The opening of the building trade is anxiously looked for, as it is expected that the demand from this quarter will be heavy. Jobbers report a dull trade. Car lots are quoted at from $1.80 to $1.85; less than car lots 10¢ ℔ keg additional.

(By Telegraph.)

Pig Lead.—The market is strong at 4.10¢ bid and 4.15¢ asked. Sales have been made at the former price, and at the moment it looks very much as if prices were going higher. There is an absence of speculation, which tends to give the market a legitimate appearance.

Spelter.—This metal continues to gain in strength. Sales of considerable quantities have been made at 4.60¢, and offerings are limited at 4.65¢. It now seems certain that the market is in a position to sustain considerable of an advance, and it will be no surprise to see Spelter selling from 10¢ to 15¢ higher within the next week. The market closes to-day with more strength than it has shown for months, and the outlook for higher prices was never better. The reaction looked for has not arrived, and, judging from appearances, will not do so for some time yet.

W. T. Koken, who recently sold out his interest in the Scherpe & Koken Architectural Iron Company to John F. Scherpe, has now purchased the entire plant and Mr. Scherpe retires. Mr. Koken has been elected president of the concern, which will continue under the old name. This concern is well known throughout the entire country, and the friends and patrons of the company will be glad to hear that Mr. Koken has returned.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, April 27, 1892.

Pig Iron.—Some little demand is reported from Eastern New England for straight Foundry Iron, and inquiries have been received for high chilling Charcoal Iron, but in the main the trade of the past week has been very quiet. On best brands a reasonable degree of firmness is now noticeable and sellers are inclined to hope that bottom has been touched. Lower grade Irons, however, are still weak. The most encouraging fact encountered is a statement by the Thomas Iron Company that they are now shipping more Iron than their output and visibly reducing their stock. Quotations are unchanged, Northern brands selling at $15.75 @ $16 for No. 1; $14 75 @ $15 for No. 2, and $13.75 @ $14 for Gray Forge, tidewater. Southern Iron sells at $15 @ $15.50 for No. 1; $14.25 @ $14.50 for No. 2 and No. 1 Soft; $13.50 @ $14 for No. 2 Soft; $13 @ $13.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Business has been so light that quotations are wholly nominal at $23 @ $23.50 for 10 to 12 %, $26.50 @ $27 for 20 % Spiegeleisen, and $61 @ $61.50 for Ferro.

Billets and Rods.—Inquiries are coming forward for small quantities of domestic Billets, but Eastern makers are not disposed to quote on a parity with Pittsburgh sellers, who are probably getting the current trade at about $25 50 @ $26, tidewater. American Rods are quiet and nominally worth $35 50 @ $36, same delivery.

Steel Rails.—Orders for Rails are being received by the mills in small lots just as the railroads need them, the largest sale reported for the past week by the mills represented here having been but 3000 tons. Light Rails are in fair demand, an inquiry being in the market from the Pacific Coast. Standard sections are firm at $30 at mill or $30.75, tidewater. Light Rails run from $30 to $30.75 at mill. A small sale of English Rails was made at San Francisco at about $38.

Manufactured Iron and Steel.—The current trade has been light in Bars and related material, but in Plates, Agricultural Shapes and special forms of finished stock there has been a fair movement, which is pronounced by some sellers to have been quite satisfactory. The outlook for building contracts is excellent. Quite a number of large structures are taking shape and will soon be ready for bids. The Postal Telegraph Building is being estimated now. Prices are not strong, and on good specifications our quotations could be shaded—namely, Beams, 2.40¢ @ 2.45¢ for small lots and 2.20¢ @ 2.30¢ for round lots; Angles, 1.9¢ @ 2.10¢; Sheared Plates, 1.85¢ @ 2.25¢; Tees, 2.40¢ @ 2.75¢, Channels, 2.25¢ @ 2.50¢, on dock. Car Truck Channels, 2¢ @ 2.10¢; Steel Plates are 1.85¢ @ 1.95¢ for Tank; 2.05¢ @ 2.25¢ for Shell; 2.35¢ @ 2.65¢ for Flange; 2.55¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2¢ @ 2.10¢, delivered. Steel Axles, 2¢ @ 2.1¢, and Links and Pins, 2.05¢ @ 2.20¢; Steel Hoops, 1.9¢ @ 2¢, delivered.

Merchant Steel.—Quotations are unchanged, as follows: Hot-Rolled Shafting, 1.90¢ @ 2¢; Machinery, 1.90¢ @ 2.10¢; Tire, 2¢ @ 2.25¢, Toe Calk, 2.20¢ @ 2.35¢, and Tool Steel, 5½¢ @ 6½¢, delivered.

Track Material.—Spikes continue to be quoted at 1.95¢ @ 2¢, Angles remaining nominally 1.65¢ @ 1.70¢, and Bolts, 2.60¢ @ 2.65¢, delivered. A New England order for several thousand kegs of Spikes is in the market which will probably test its strength pretty thoroughly.

Old Material.—So little is doing that dealers are loth to make quotations.

Warren, Wood & Co., 29 Broadway, New York, have been appointed agents for the sale of Haselton American Scotch Pig Iron in the Hudson River district and New England, Eastern Pennsylvania, New Jersey, Delaware and Eastern Maryland.

Metal Market.

Copper.—There have been no important developments in the market for this metal. The demand for electrical purposes appears to have moderated, and for consumption in other lines the call is still moderate. This apathy on the part of consumers is attributed chiefly to disinclination to place orders, except as imperative needs may dictate, pending the outcome of lake and rail shipments from the source of supply. Meanwhile a large quantity of material is being used up, and sales agents are reserved in their offering in view of the favorable outlook from their standpoint of observation. From second hands about 50,000 lb of Lake Ingot were sold at 11.90¢ on exchange contract, for June delivery, but 12¢ regular seems to be a close price for lots from first hands. One contract for a considerable quantity, buyer's option of Ingot, Cakes or Bars, was placed at 12¼¢ @ 12⅜¢. At this writing Cakes are valued at 12¼¢ and Bars at 12¼¢ @ 12⅜¢. Arizona Ingot is quoted at 11½¢ and common casting brands are valued at 11⅛¢ @ 11⅜¢. The latter, it is rumored, have been sold or offered from second hands at a shade under the inside price quoted.

Pig Tin.—Speculation has not been on as large a scale as it was last week, yet the dealings amount to considerable—probably 200 tons—and prices have been forced still higher. The operations were chiefly in May delivery, of which sales were made at 20.65¢ @ 20.70¢, but some parcels for current month delivery brought 20¼¢, and spot sales at the same price were also noted. The buying for speculative account has been chiefly by the interest most prominently identified with the upward movement in values that has been going on for several weeks, and that particular interest is believed to have a firm grip upon the market. The late heavy arrivals appear to have been taken care of and a good percentage distributed in various quarters. Some authorities state that the April consumptive movement has been above the average, which is not to be wondered at considering the increased consumption in Tin Plate manufacture and the fact that fully the usual quantity is being used in other lines. The report has circulation that importations are being made in anticipation of the McKinley duty; but that is not in harmony with late light shipments from the Straits, nor with the fact that the importers have parted with a great deal of Tin recently brought this way.

Pig Lead.—The market has been very firm at the higher prices established last week and rather more active. Fully 600 tons were placed at 4.27½¢ @ 4.30¢, and the latter price seemed to have been a strictly inside one at the close. Consumers in this vicinity are extremely conservative buyers, and that fact seems to be somewhat of an obstacle in the way of advancing prices. It is the fact, however, that the available supply on the spot is unusually light, and offering from the sources of supply seems to be unusually reserved as well, indicating a strong position superficially at least.

Spelter.—Some parcels purchased for export account have been sold here instead of being sent abroad, but that circumstance has had no visible effect upon the market. For that matter, prices have advanced slightly in the face of the re-sales, moving up to 4 80¢ here and 4.60¢ in East St. Louis on actual sale. At the close 4.80¢ @ 4.85¢ was asked for prime Western, but it was intimated that some brands might be secured for near future delivery at 4¼¢ in lots of five carloads.

Antimony.—There has been rather more movement in this metal and prices are a shade firmer. Current quotations are 10.85¢ @ 11¢ for Hallett's, 12⅜¢ @ 12½¢ for LX and 14⅜¢ @ 14⅞¢ for Cookson's, and 13¢ for Crown brand.

Tin Plate.—A dull and uninteresting market is still to be recorded. For store lots the sale is exceedingly slow at present and the movement in futures is spasmodic, with the aggregate mod rate. Prices have remained almost stationary, with those for Ternes quite firm, but others leaning slightly in buyers' favor. We quote as follows for full weights: Coke Tins—Penlan grade, IC, 14 x 20, $5.25; J B. grade, do., $5.35; Bessemer do., $5 30; light weights, 100 lb, 10¢ less; 95 lb, 20¢ less; 90 lb, 25¢ less than full weight; Siemens Steel, $5.37½. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75 @ $5.80; IX basis, $6.80. IC Charcoals—Melyn grade, ½ X, $6 40; for each additional X add $1.50; Allaway grade, $5.75; Grange grade, $5.85; for each additional X add $1.20, Charcoal Ternes—Worcester, 14 x 20, $5 75; do., 20 x 28, $11.30; M. F., 14 x 20, $7.37½; do., 20 x 28, $14.75; Dean, 14 x 20, scarce; do., 20 x 28, $10.80; D. R. D. grade, 14 x 20, $5.35; do., 20 x 28, $10.40; Mansel, 14 x 20, scarce; do., 20 x 28, $10 50; Alyn, 14 x 20, $5.40; do., 20 x 28, $10 60; Dyffryn, 14 x 20, $5.65; do., 20 x 28, $10.90. Wasters—S. T. P. grade, 14 x 20, scarce; do., 20 x 28, $10; Abercarne grade, 14 x 20, $5; do., 20 x 28, $9.80.

Coal Market.

The Anthracite Coal trade is in a state of suspense, awaiting the expected advance in prices, supposed to be equal to 25¢ ℔ ton for Stove and 10¢ @ 15¢ for other sizes, and many sellers are temporarily withdrawn from the market. It is further understood that the purchases of Coal for which boats are not placed at the various shipping ports before April 30 will be canceled. The new schedule, it is said, will be adhered to with vigor.

Recent events in the Anthracite Coal trade are not merely a "change," but a "revolution," so a wholesale dealer remarks with emphasis. The entire temper of the market is different from anything before known for several years. The combined operators and even the independents realize that the production is now thoroughly in control and consequently will vary with the demand for consumption.

Referring to recent events, a Philadelphia paper says: "After all, however, the entire story of a Coal war amounts to very little. The reduction in rates is practically the same as that taken by the Reading Coal and Iron Company on their contracts to buy Coal from individual operators at 60 % of the price at tidewater, thereby allowing 40 % for freight—which, when coal is $3.65 ℔ ton, is $1.46. But the business that can be obtained by the Pennsylvania is relatively so small that it is not worth the attention of the combine." Still it is evident that the Pennsylvania Railroad Company do not intend to be "snowed under." Not only have they

obtained possession of important collieries and purchased new Coal fields, but reports are believed that they will enter the Hazleton or Lehigh Coal fields by means of new railway connections through Scranton. At present all the Coal supplies the Pennsylvania reaches are the upper or Wyoming region at Wilkesbarre and the lower or Schuylkill region at Pottsville.

The Reading combine also has to contend with the powerful independent firm of Coxe Bros., who are still at liberty to sell Coal at discretion and have important new railway facilities.

John H. Jones, Coal statistician of the Reading Railroad, has been appointed general Coal freight agent, which gives him a wider jurisdiction.

In the Bituminous trade the association prices are steady, many contracts with steamship companies and others being resumed at the old rates. The Anthracite deal tends to impart firmness.

The Philadelphia *Press* says: "It is said that the Baltimore and Ohio will build a line north from Johnstown into the Bituminous Coal regions. If this is done Bituminous Coal traffic of the central part of this State will be divided between that interest and the New York Central and the Pennsylvania and the Erie, and other lines running North. The long haul of the Baltimore and Ohio to tidewater would make it impossible to compete with roads in this State or Virginia, which are more favorably located."

Financial.

Trade prospects are more frequently the subject of inquiry. However large the distribution of merchandise, prices are low and profits small, a fact that cannot be regarded with satisfaction. Then the accumulation of money at commercial centers is abnormal, leading to the inference that capitalists are either distrustful or fail to discover opportunities for profitable investment. The most notable feature is the state of foreign trade, imports having quite recently become disproportionately large. At the same time the exports are declining and apparently as a natural consequence another outward movement of gold has commenced, but a leading banker remarks "It is safe to say that the amount yet to go forward will not exceed $15,000,000." According to another, gold exports are caused by disturbances on the European Continent rather than the condition of trade at home. The deplorable state of Italian finances may be a sufficient explanation. At the same time Austria and Hungary are contemplating a measure of financial reform, to be submitted to Parliament early in May, which places a premium of 19 % on gold taken in payment of custom duties. In April, 1891, the shipment of gold averaged over $4,000,000 a week and in May the loss was $30,000,000. This year the loan market is much easier and no stringency is anticipated.

East-bound shipments by rail from Chicago last week were 65,054 tons, against 54,433 last year. Lake lines carried 106,600 tons additional.

United States bonds are quoted as follows:

U. S. 4½s, 1891, extended	100
U. S. 4s, 1907, registered	113¾
U. S. 4s, 1907, coupon	115¾
U. S. currency 6s	109

Sterling exchange rates were advanced to $4.88 @ $4.89½, which fully warrants gold exports as an exchange transaction. Bills of exchange on present exports have all been sold ahead, and, owing to the low prices for the products, have not yielded so much money as last year. Wheat is down 20 points, corn and cotton very much, reducing the available supply of bills.

The stock market was influenced by the varying phases of the coal deal, in which the Reading and Pennsylvania companies figured as the principal contestants. The former assumes to have virtual control of the anthracite interests, but extensive purchases of coal properties and new railway projects in which the latter are concerned show that this position will be vigorously disputed. The Pennsylvania, however, disclaims any design of a hostile character. The return of the Baltimore and Ohio Railroad to the ranks of dividend payers is regarded as one of the most favorable developments of recent weeks. On Friday a statement by Lazard Freres & Co., to the effect that the gold movement to Europe was likely to be steady for some time, the Bank of France offering facilities for shipments by allowing interest on the metal in transit, made an unfavorable impression. The only news of importance, outside of the gold movement, was the announcement from Washington that President Harrison had cabled to Europe invitations to the proposed international monetary conference. Reading was stronger on reports that the prices of Coal would be advanced, taking effect May 1.

The weekly bank statement was favorable, the local institutions reporting a gain in reserve of $3,744,475, which places the surplus at $19,532,975 above the 25 % required by law. The banks gained $4,272,900 in cash and contracted loans $1,702,800. It should be added that Saturday's shipments of gold do not figure in this statement.

Commercial paper continues in good demand, and although the offerings are large, as is usual at this season, they are promptly taken. Rates are 3½ % for 60 to 90 day indorsed bills receivable and 4½ to 5 for good single names, four to six months.

The Union Trust Company reduced their rate of interest on deposits to 1 % per annum and some of the banks are declining new accounts. Bonds are in good demand.

The silver market was weaker, certificates declining to 87. Bar Silver in London was unchanged at 39 1/16d ₱ ounce. A call was issued for a National Silver Convention, to be held at Washington, May 26 and 27.

The statistics of the foreign trade of the United States just received from Washington afford interesting comparisons for two years up to the 31st ult, are especially noteworthy as showing the rapid growth of the import trade. Imports of merchandise during March make an extraordinary total of $86,549,338, an amount in excess of any previous month in the history of the country. Inferentially the balance of trade is not likely to be as favorable in the immediate future as in the past, exports having fallen off since January 1 about $19,000,000, imports increasing meanwhile about $23,800,000. The value of imports and exports during various periods appears from the following summary:

		1891.	1892.
Exports...	12 months..	$872,000,286	$1,006,284,506
	9 months..	697,916,993	819,720 689
	3 months..	232,830,634	268,595,494
		1891.	1892.
Imports...	12 months..	$835,609,364	$837,068,585
	9 months..	618,185,242	610,327,631
	3 months..	205,915,068	214,652,710

Detroit.

WILLIAM F. JARVIS & Co. of Detroit, Mich., report under date of April 25, 1892, as follows: While the volume of transactions in Lake Superior Charcoal has fallen off to a considerable degree in the local and Eastern markets, there still remains unsatisfied a sufficient number of inquiries to make the market anything but dull. Some large tonnage was placed during the past week, although this is nothing out of the ordinary for this season of the year. In fact, the trade is backward for Lake Superior Iron, although inquiries coming as they have from different parts of the country, and reports from other markets of large trading, lead us to believe that there is a fair outlook for this grade of metal. This is due not so much to the large consumption but to the fact that so many furnaces contemplate blowing out, or have blown out, until the market improves, and indeed many of these furnaces are so situated that unless the market does improve to a considerable extent they will not blow in again, as a Charcoal furnace is one that requires considerable time to gather their materials together to recommence operations; particularly is this true of the Charcoal. There have been no transactions of note for Northern or Southern Coke Irons beyond regular carload orders Prices remain unaltered, but still on a low plane. We quote the market as follows:

Lake Superior Charcoal, all numbers	$16.50 @ $17.50
Lake Superior Coke, Bessemer	16.00 @ 17.00
Lake Superior Coke Foundry, all ore	16 50 @ 17.00
Ohio Blackband (40 per cent.)	17.00 @ 17.50
Southern No. 2	15.00 @ 15.50
Southern Gray Forge	13.25 @ 13.74
Jackson County (Ohio) Silvery	17.75 @ 18.25

Cleveland.

CLEVELAND, Ohio, April 25, 1892.

Iron Ore.—But few sales of Ore have been reported since last week's letter, and there is nothing in connection with them that is of special interest. The shipment from the docks to the furnaces continues unabated. For the week ending April 22 the movements amounted to 30,447 tons, which is over double the amount shipped to the furnaces during the same period in 1891. From present indications the shipping season will commence with the docks almost free from Ore Summing up the entire Ore business, so far as actual sales are concerned, it is safe to say that the past week has been decidedly a stupid one. However, more life is apparent in the direction of getting down new Ores for the present season. A little business has been done by the Ore and vessel men in the way of charters, and this has made it clean and definite as to what is the cost at present for bringing Ores from the upper lakes. The charters that have been made so far are on the basis of $1.05 from Ashland, although it is rumored that a few charters have been made at $1. Vesselmen, as a rule, deny the truth of this rumor. From Marquette the rate is 80¢ and from Escanaba 60¢, and a few engagements are reported at these figures. A little more is likely to be done during the coming week, but a lively movement along this line is not probable for some weeks yet. This is quite in contrast with the figures claimed by the vesselmen at the opening of the season, It was then asserted that the Escanaba rate would not fall much below $1, while it was confidently believed that the Ashland rate would not fall below $1.25. However, the midwinter sales of Ore to the Carnegies and the Illinois Steel Company did not precipitate the buying movement anticipated from the furnaces. The rates now quoted above are likely to be those of the entire season. It can be safely asserted that furnacemen are paying no more for their present small purchases than was paid for the same grades of Ore last year. Indeed, last season's prices have probably been shaded in a few instances.

Pig Iron.—There is practically the same lifeless condition to the market as when last week's letter was written. It is so absolutely dull, in fact, that nothing of any consequence or importance can be said concerning it. Occasionally a rumor creeps out that 100 or 200 tons have been

sold, but when dealers are questioned concerning these reports they say positively that nothing is being done. This lethargy, if continued, will bring the Ore sales for 1892 even below the minimum estimates two months ago. Nominal quotations:

Nos.1 to 6 Lake Superior Charcoal	$17.50 @ $18.00
Nos. 1, 2 and 3 Bessemer, per ton.	15.00 @ 16.00
No. 1 Strong Foundry, per ton..	15.50 @ 16.00
No. 2 Strong Foundry, per ton..	14.50 @ 15.00
No. 1 American Scotch, per ton.	..... @ 15.60
No. 2 American Scotch, per ton .	.....@ 14.60
No. 1 Soft Silvery, per ton.....	15.50 @ 16.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	13.50 @ 14.00
Mahoning and Shenango Valley Red Short Mills, per ton	14.00 @ 14.50

Manufactured Iron.—A brisk business is reported in the Bar Iron trade. There is an excellent demand and the mills are well supplied with orders. About 1.60¢ is an average quotation.

Old Rails.—Very little is being done and sellers will be unable to obtain more than $19.50 @ $20 for any considerable amount.

Nails.—The market is active and prices firm at $1.80 for Steel Wire and $1.65 for Steel Cut.

Barb Wire.—The market continues very firm and the demand is reported to be exceedingly good.

Scrap Iron.—Business is very light and prices weak. No. 1 Railroad Wrought at $17.75 @ $18, Cast Scrap at $12.50 @ $13 are about the present quotations.

Imports.

Hardware, Machinery, &c.

Boker, Hermann & Co., Arms, cs., 24
Brunner Bros., Mach'y, pkgs., 4
Babcock & Wilcox Company, Mach'y, pkgs., 14
Downing, R. F. & Co., Mach'y, pkgs., 2
Degrauw, Aymar & Co., Chains, 8; do., cks., 8
Dolge, Alfred, Ironware, cs., 37
Graef Cutlery Company, Cutlery, cs., 11
Hampton, F. W. & Co., Mach'y, cs., 3
Hammacher, Schlemmer & Co., Nails, cs., 49
Knauth, Nachod & Co., Mach'y, pkgs., 3
Lindner, Emil, Mach'y, cs., 2
Paiser, B., Hdw., cs., 12
Sarembe Bolt Manufacturers, Mdse., cs., 2
Sellers, W. B., Mdse., cs., 4
Straus, Ignatz, Hdw., cs., 4
Sheldon, G. W. & Co., Arms, cs., 16; Hdw., cs., 2
Thurnauer, G. M., Ironware, cs., 2
Werlemann, H., Arms, cs., 9
Williams, R., Jr., Mach'y, cse., 1
Order.—Mach'y, cs., 45

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, April 27, 1892.

Pig-Iron warrant prices have moved irregularly, with only a moderate business in Scotch, but livelier trading in Cleveland and Hematites. Prices receded early in the week, but subsequently advanced to 41/1 for Scotch, 38/4½ for Cleveland, and 48/10½ for Scotch. The reaction was due to heavy withdrawals from stores, causing "bear" operators to cover, and creating scarcity of English Iron. The quantity of the latter in stores is now 114,000 tons, against 121,000 tons a week ago, making a repuction of 15,000 tons the past fortnight. Scotch stocks have decreased 8000 tons during the same time and amount now to 474,000 tons. There are now eight Cleveland and 77 Scotch furnaces blowing.

There is a somewhat better feeling in the Steel trade and work is soon to be resumed at several Barrow mills. Ship Plates at £6. 5/ are in very good demand. Holders of Old Iron Rails have manifested more anxiety to sell, and offers of double-heads were made at £2. 15/, f. o. b., without result.

Pig Tin for prompt delivery has advanced about £1 and the market has been active. Light stocks and moderate Eastern shipments are the chief features, but operations of leading operators figured prominently. Consumers' purchases continue light.

Copper prices have averaged lower. Absence of definite news regarding proposed restriction of output and slowness of negotiations induced weakness on the market. Contradictory statements regarding the Anaconda mines have also had an adverse effect. Purchases for consumption are only fair.

Tin Plate market has remained quiet. Inquiries plentiful and large lines offering, but prices unsatisfactory. Shipments are heavy.

The Landore Tin Plate Company, Swansea (seven mills) have suspended.

Three Welsh firms, it is reported, contemplate erecting Tin-Plate works in the United States.

It is Reported—

That G. F. Wentch, Dysart, Iowa, has commenced the Hardware business.

That Henry C. Akers has taken a partner in his Hardware business at Mankato, Minn., in the person of Thomas Rooney, formerly of Lake Crystal.

That Isaac Catt, Lacota, Mich., has sold his Hardware store to Mr. Thimas of Hartford, who will continue the business at the old stand.

That Mr. Reynolds of Roberts, Ill., is putting up a Hardware store at North Kankakee.

That Campbell & Shigley, Hardware merchants, Clark's Hill, Ind., were damaged by fire on the 25th ult. Loss, $5000: insurance, $2500.

That Christie B Briggs is now carrying on the Hardware business formerly conducted by Woodruff & Wixson at Penn Yan, N. Y.

That the Omaha Hardware Company's building at Omaha, Neb., was destroyed by fire on the 27th ult. Loss, $200,000.

That the McMasters Hardware Company, Springfield, Mo., are fitting up a new store.

That Geo. W. Thayer & Co., Minden City, Mich., have opened a Hardware store in Erskine & Molloy's building.

That Harry Rice, Minden City, Mich., has moved his Hardware stock to Brown City.

That Kolbe Bros.' Hardware store, 171 and 173 St. Aubin avenue, Detroit, Mich., was attacked by fire on the 23d ult. The loss is estimated at $1500, there being an insurance of $3000.

That Dickover & Provines, Hardware merchants, Huntington, Ind., are erecting an addition to their store.

That Leroy Coleman of the firm of Gorham, Coleman & Woodruff, Leroysville, Pa, has sold his interest in the Hardware business to P. E. Woodruff.

That Hoey & McNeal's Hardware store, Portville, Iowa, was entered by burglars on the 27th ult., and a large quantity of goods stolen.

That E. M. Harwood, Kalamazoo, Mich., will remove his Hardware stock to a larger and more commodious store.

That H. D. Kilmer, Martinsburg, W.Va., has sold his Hardware business to W. B. Walters.

That N. E. Dotty, Renssalaer Falls, N. Y., has sold his stock of Hardware to T. T. Craig.

That R. W. Harris, Waterport, N. Y., has disposed of his Hardware stock to Wilson Hardenbrook of North Parma.

That C. H. Starkweather, Napa, Cal., dealer in Hardware and Paints, has sold out to W. F. Ingalls.

That John Jackson, Stockton, Cal., dealer in Hardware and general stores, has sold out.

That P. J. Friermuth, Watsonville, Cal., has admitted J. H. Chapin as a partner in his Hardware business

That C. E. Freeman has commenced the Hardware business at Martinsville, Ill.

That J. Korner has closed out his Hardware business at Roseland, Ill.

That Sweedeland & Ferlen are a new Hardware and Implement firm at Stratford, Iowa.

That M. C. Gibson, Implement merchant, Poole Mills, Ky., has sold out his business.

That Ewen, Mich., has a new Hardware merchant in the person of W. J. Mack.

That the Hardware firm of Rowe & Raymond, Mason, Mich., has been dissolved A new firm, Fitch & Raymond, continues the business.

That M. E. Greenough & Son, Millington, Mich., have dissolved partnership in their Hardware business.

That Hewitt Bros. have recently began the Hardware business at Pratt Ford, N. D.

That James D. Jenkins, Oak Hill, Ohio, has lately entered the Hardware business.

That a new Hardware and Implement firm has been organized at Corvallis, Ore., under the style of Simpson & Haston Company.

That the Wead Hardware Company has been incorporated at Swanton, Vt.

That H. Darby of the Hardware firm of Darby & Son, Pomeroy, Wash., has retired from the business.

That T. J. Trapp & Co. are about to close out their Hardware business at New Westminster, B. C.

That Geo. E. Letcher has sold the Rowley Hardware stock at Mitchell, S D, to J. O. Walrath.

That A. H. Swain will engage in the Hardware business at Shenandoah, Pa.

That S. W. Pickett has purchased the Hardware stock of Mr. Clark, Indianola, Ind.

That Strate & Longshore, Hardware merchants, Watseka, Ill., have dissolved partnership and sold out to E. S. Young.

That W. W. Stevens has purchased the Hardware stock of J. Richardson, Ravenna, Ohio.

That George M. Pierce has bought out the Hardware firm of Fish & Kronenberg, Hamburg, N. Y.

That E S. Beecher has commenced the Hardware business at Orwell, N. Y.

That G. W. Rockwell, Hardware dealer, Horseheads, N. Y., has sold out to R. G. Eisenhart. It is understood that the purchase was made in the interest of some party in Pennsylvania,

That E. G. Bixby and M. J. Miller have recently formed a partnership for the carrying on of the Hardware business at Oneonta, N. Y.

That the Phillips Hardware Company, Phillps, Maine, have been organized, with a capital stock of $10,000, paid in. F. M. Parker is president of the company and W. B. Butler treasurer.

HARDWARE.

Condition of Trade.

Reports from the country at large refer to a very perceptible increase in the volume of business, and manufacturers and their representatives, as well as jobbers, refer to the condition of trade as much more satisfactory than for some time. Retailers are obviously buying more freely, and there are evidences that the stocks of jobbers on many lines are running low. Seasonable and summer goods have a leading place in orders, which include also staple and Shelf Hardware in good quantities. In the matter of price there is little new to report, the past week having been uneventful in this regard, with no important changes. While there is a better feeling, there is no evidence of stronger prices, and the purchases of the trade are made to meet early requirements, few orders being placed in anticipation of higher prices.

Chicago.

(*By Telegraph.*)

Jobbers report an excellent demand for nearly all classes of goods. Prices are firm and unchanged on the leading lines. Some specialties have advanced slightly. Poultry Netting seems to be in exceedingly great demand and discounts have advanced from discount 80 per cent. to discount 75 and 10 per cent. Manufacturers have all the orders they can fill for some time, and are refusing to accept large orders at this price. The demand for Builders' Hardware and shelf goods is increasing. The greater portion of the orders come from the larger country towns. Traveling men report that the prospects for an increased business are very favorable. Money throughout the country is plenty and this year's crops promising. Dealers are buying liberally, and, as a rule, increasing their stocks.

St. Louis.

(*By Telegraph.*)

A change in the weather from rainy, dreary days to bright and pleasant ones has helped the jobbing trade wonderfully. Country dealers are coming in to do their buying and are ordering freely in anticipation of a large trade. There is a steady demand for staple goods, and in Barb Wire trade is very heavy indeed. The price of Barb Wire, however, is being shaded somewhat, and when the demand shows signs of abating the present prices will hardly prevail. Wire Nails are also easier and jobbers are all carrying large stocks. The Southern trade does not show much improvement. In addition to the low price of Cotton they are now undergoing a trial with swollen rivers which makes business almost impracticable. On the other hand, the Western trade is heavy, with a prospect of a large increase over last year's trade.

Notes on Prices.

Cut Nails.—A fair but not especially heavy demand for Cut Nails is reported, with no special change in the tone of the market in the matter of prices. The condition of things in the East is apparently somewhat better than in the West, the understanding between the mills giving more regularity in quotations than has characterized the market for some time. Prices are on a basis of $1.55 for round lots of Steel Nails at mill, on a 25 or 30 cent average, freight being equalized with competing points. Iron Nails are 3 cents a keg less, and on orders of 1000 kegs or more of either Iron or Steel Nails a concession of 5 cents is made. The quotation on small lots from store in New York is $1.75, carloads on dock being held at $1.65.

Chicago by Telegraph.—There is a light demand for Cut Nails and prices range about the same. Makers are asking $1.60, at factory, on carload lots, with a 30-cent average, and talking higher prices. Jobbers quote $1.70 from store to ordinary trade. Large lots could be bought at a shade below this figure.

Barb Wire.—While there is some falling off in the demand, as usual at this season, the mills are generally fully occupied in filling orders on their books. Prices are without change on a basis of $2.65 for Four-Point Galvanized at mill.

Chicago, by Telegraph.—There is an exceptionally strong demand for carload lots of both Galvanized and Painted Wire. Manufacturers are away behind their orders at $2.30 for early shipment, $2.35 being the price asked by nearly all of the makers, and some refuse to take orders at this figure when deliveries are required before July 1. On Galvanized $2.80 would be a bottom price and it is doubtful whether any large quantities could be obtained at less than $2.85 for Painted and $2.95 for Galvanized.

Wire Nails.—In accordance with the intimation given in our last issue, the Western Wire Nail Association have adopted a new miscellaneous Wire-Nail list, which bears date May 1, and replaces the one which went into effect April 11. In this new list, which we print below, it will be observed that the prices given are for 5 and 10 pound packages, with extras to be added to list for ½ and ¼ pound papers and for special heads, &c., while a rebate is to be deducted from list for Nails in 25 or 50 pound boxes or 100 pound kegs bulk. This arrangement will undoubtedly meet with approval from the trade, and be found much more convenient than the recent list. The new list is subject to a discount of 80 and 10 and 10 per cent.:

Miscellaneous Wire Nail List, May 1, 1892, applying to all Nails except Standard Nails in kegs or boxes. Prices stated are for 1, 5 and 10 pound packages.

Length.	Gauge	Per lb.	Length.	Gauge.	Per lb.
¼ in.	No. 19	65c.	1½ in.	No. 13 to 4	24c.
	" 20	85		" 14	26
	" 21	95		" 15	27
⅜ in.	" 18	50		" 16	28
	" 19	55		" 17	29
	" 20	65			
	" 21	75			
½ in.	" 18 to 14	45	1¾ in.	" 12 to 4	23
	" 19	50		" 13	24
	" 20	55		" 14	25
⅝ in.	" 17 to 12	38		" 15	30
	" 18	40			
	" 19	45			
	" 20	50	2 & 2¼ in.	" 12 to 3	23
¾ in.	" 15 to 10	31		" 13	24
	" 16	33		" 14	25
	" 17	35			
	" 18	36			
	" 19	40	2½ & 2¾ in.	" 9 to 3	21
⅞ in.	" 14 to 8	29		" 10	22
	" 15	30		" 11	23
	" 16	32		" 12	24
	" 17	33		" 13	25
	" 18	34			
1 & 1⅛	" 15 to 7	28	3 & 3¼ in.	" 8 to 3	20
	" 16	29		" 9	21
	" 17	31		" 10	22
	" 18	32		" 11	23
				" 12	24
1¼ & 1⅜	" 13 to 6	26			
	" 14	27			
	" 15	28	3½ & 4 in.	" 9 to 3	20
	" 16	29		" 10	21
	" 17	30		" 11	22

EXTRAS.—Add to List.

½-pound papers ..... 4c.
¼ " ..... 8c.
Oval, cone or other special heads or special points, or for barbing or annealing ..... 2c.
Nails combining several specialties, add as above for each.
Galvanized or Tinned Nails at special prices.

REBATES.—Deduct from List.

Nails in 25 or 50-pound boxes, or 100-pound kegs, bulk ..... 1c.

The new card on Standard Wire Nails is in general use and seems to be accepted by the trade as satisfactory. Quotations are without change on a basis of $1.70 for carload lots at mill, concessions being made on especially desirable orders. A good volume of business is reported.

Chicago, by Telegraph.—There is quite an active demand for Wire Nails, both from jobbers and mill. Carload lots are quoted at $1.75, Chicago. Buyers seem to be very much demoralized by the new card which was put into effect several weeks ago, and there is much figuring in order to take advantage of the difference in the classification made by the cards on large and small sizes. Jobbers continue to quote $1.85 for small lots from store and $1.80 for mixed carloads.

Glass.—The determination to close the factories May 30 seems to have made no difference in the price at which Glass can be bought. There is quite an amount of Glass being sold in small lots, but at prices which leave the jobber a very small profit. The belief that Glass is as cheap now as it will be next fall has resulted in jobbers and large buyers placing orders for future delivery—that is, before the shut-down. They are therefore prepared to supply present demand at the best figures that can be obtained, while in case of an advance in price the value of stocks on hand would be increased. The factories report stocks on hand as low, but should stocks

become exhausted there will be abundance of French Glass to supply the demand. There is no doubt that the last Glass made this fire will be made May 28, as the 30th is Decoration Day, and Decoration Day is a holiday among Glassmakers. Quotations are without change, as follows: American Window Glass, 1000-box lots or more, 80, 10 and 5 per cent. discount; carloads, 80 and 10 per cent. discount; less than carloads, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and imported Plate at a discount of 60 per cent.

Australian Letter.

FROM RECENT ADVICES which have been received from Polhemus Lyon, our special foreign representative, we learn that his illness, to which we have already referred, was quite serious. He was taken with typhoid fever on his way from Calcutta to Melbourne, and at one time fears were entertained that there might be a fatal result during the voyage. This, however, was fortunately averted, and he was improving on his arrival at Melbourne, where, however, his illness continued of a serious nature, and only within a few days, as we are advised by a cablegram received 24th inst., has he been discharged from doctor's care. He is, however, pronounced entirely convalescent and will undoubtedly gradually resume attention to business matters.

Under these circumstances he was, of course, unable to send his usual letter, but we are gratified to be able to give our readers the following communication from one of his party, in which information is given in regard to the existing stagnation in Victoria:

Three or four years ago this colony had a "land boom," at which time the price of land was advanced tremendously and people bought property paying part in cash, or supposably equivalent securities, and part on one, two and three years' time, expecting to sell before the bills became due at a great advance in price. In due course of time the boom died out and many were unable to pay the bills when they became due, and even those who supposed that they had sold their lands and were all right found that their securities were almost worthless and in many cases entirely so. Over-speculation and over-borrowing tells the story better than any long thesis on the subject. This colony has borrowed in the ten years previous to 1891 the sum of £87,000,000, private and government loans, and this has come out in goods for the most part, and unless the goods are used for reproductive purposes the indebtedness remains to a large extent, and this they were not used for to any very large extent. It will all be righted in time, but the country must produce more wealth itself and in order to do this the price of labor must be reduced, for it is still at "boom rates."

The Government tried to float a loan of £4,000,000 a short time ago in London, but the financiers told them that their credit would not stand it, so the public works had to be stopped and this in turn threw many men out of employment, thus creating the "unemployed," who can in reality get plenty of work up country, but they will not leave the city, and claim support from the Government; moreover, they will not work for less wages than they have been getting. Many claim that the strike of two years ago is the cause of the present depression, but the best thinkers of the colony say that it only depressed things for the time being and has nothing to do with it now. Fear of the labor party getting in power is also claimed to have its influence and in all probability it has some, as well as the low price of silver. But after all is said this present depression all reverts to the speculative rise of three years ago, which increased rents, especially in business localities, and many are still paying "boom rents." These have got to be reduced and this they are doing very fast.

The loan and mortgage companies have held a great many deposits and have been borrowing money at too high a rate of interest to last, so when people became frightened and many of these companies had "runs" on them, they did not have the money to pay and so went "bung," as they say out here. These companies securities were property that was worth far less than it was held at, so, of course, much money was lost by depositers and shareholders. At present things are really in a bad state in Melbourne. People are advertising as selling off at less than cost on account of the "bad times," and the large Hardware houses say that their turnover is not more than one-third of what it was; they have therefore more time to look at new samples, and seed sown now may reap a good harvest in times to come. It is a trying time for shaky houses and many will be weeded out, so in the future the houses that do remain will be very good. South Africa experienced the same thing only a short time ago, and now the remaining houses are in very fine condition.

The country trade remains very good. Out of the 480,000 people in Melbourne it is fair to suppose that 200,000 belong to the working class, and at least half of these are out of employment. On an average of 10 shillings per day this withdraws £100,000 per day from trade. With such facts as the above one can readily see that there must be a depression throughout all branches of business.

ROBERT A. COIT has removed his office to 62 Reade street, where he has enlarged facilities for carrying on his business. Mr. Coit represents the W. C. Edge Company, Fancy Brass and Aluminum Chains; W. M. Vogel & Bros., Tin Screw Caps, Oilers, &c., and F. Finter, Cast Britannia Sprinkler, Bottle and Perfumery Caps. A full line of samples of the above goods will be carried.

Nickel Saucepans.

BRONSON SUPPLY CO., Cleveland, Ohio, and 72 Beekman street, New York, inform us that a new material is being used in the line of nickel metal (not nickelplated) utensils, which they are putting on the market. They have now three sizes of Saucepan ready—namely, sizes corresponding to No. 19, No. 21 and No. 22 of their Never-Break Wrought Steel Hotel Stew Pan. In regard to the construction of these nickel Saucepans and their advantages they write as follows:

A sheet of pure nickel is welded on to both sides of a sheet of high-grade steel, and then this composite sheet is stamped up into a seamless Saucepan, one-tenth of the thickness of the metal in the finished Saucepan being pure nickel on the inside of the pan and one-twentieth of the thickness of the metal being pure nickel on the outside. This gives practically the same wearing qualities in pure nickel metal as though the whole thickness of the metal in the Saucepan was nickel. At the same time, the steel not only strengthens and reinforces the nickel, making a strong, rigid and durable vessel, but, pure nickel metal being very expensive, this brings the price of the Saucepan within the reach of everybody. This style of ware originated in Germany, where it has been in use for some years, and is indorsed and highly recommended by all the leading physicians and scientific men in Europe, as culinary acids do not affect the nickel metal, and in this respect there is all the difference in the world between the use of the pure nickel metal and nickel plating. While comparatively new in this country, some of these nickel Saucepans have been in use in leading hotels and public institutions in New York, Boston, Cleveland, Chicago and San Francisco for two or three years, from whom the Bronson Supply Company have testimonials saying that while the nickel Saucepans have been in constant use all the time, they are in just as good condition to-day as when they got them, and they have had to put no expense whatever on them since getting them. These pure nickel goods will come into competition more particularly with copper utensils, and while copper commands a high price to start with, it also has to be retinned three or four times every year in order to keep the utensil in proper condition for use, which entails a further very considerable and continued expense, while with the nickel utensils all expense ends with the purchase price.

Norwich Lock Mfg. Co.

NORWICH MFG. COMPANY, Roanoke, Va., for whom the Alford & Berkele Company, 77 Chambers street, New York, are agents, are distributing their 1892 catalogue among their trade. It is a handsome cloth-bound volume, 10½ x 13 inches, of 400 pages, containing illustrations and descriptions of their goods. The line includes Mortise Latches, Bolts and Locks, Sliding-Door Sets, Cylinder Rim Night Latches, Rim Locks, Front-Door Sets in various finishes, Jet, Porcelain and Natural Wood Door Knobs, Keys, Escutcheons, Flush Bolts, Screen-Door Catches, Sash Fasts, &c. The book is finely printed on extra quality paper, while the matter is well and conveniently arranged. A revised list-price and discount book accompanies the catalogue.

Southern Hardware Jobbers' Association.

THE SECOND ANNUAL MEETING of the Southern Hardware Jobbers' Association was held at Memphis, Tenn., on the 22d and 23d of April, the first annual meeting having been held at Nashville, in 1891. The association was formed a little over six months ago, with 14 members; while its membership now numbers 43, covering a territory of 16 cities and 8 States. Delegates were present from Anniston and Birmingham, Ala.; Little Rock, Ark.; Macon, Columbus and Atlanta, Ga.; Vicksburg, Miss.; Charlotte and Greensboro, N. C.; Memphis, Nashville, Chattanooga and Knoxville, Tenn.; Lynchburg, Richmond and Norfolk, Va. The prominent subjects brought before the association were as follows: The habit of publishing by manufacturers in trade journals and sending broadcast their prices, which are almost as low as the price charged the jobbing trade; a reclassification of Hardware in the Southern Railway and Steamship Association; trade abuses in the Hardware jobbing trade; classification of staple Hardware to be sold strictly on 60 days' time; manufacturers and their agents selling the retail and consumers' trade at such prices as not to leave the jobber a legitimate profit, and the desirability of each city having a local organization. On the evening of the 22d the association members and guests partook of a complimentary banquet at the Gayoso arranged by the local committee. The officers of the association for the ensuing year were elected, as follows:

W. E. GIBBINS, Knoxville, Tenn., president.

A. D. LANGSTAFF, Memphis, Tenn., first vice-president.

W. A. CHENOETH, Birmingham, Ala., second vice-president.

W. P. SMITH, Knoxville, Tenn., secretary.

J. C. VANCE, Chattanooga, Tenn., treasurer.

Further reference will be made to this meeting in our next issue.

Montgomery & Co.

MONTGOMERY & Co., 105 Fulton street, New York, have just issued a catalogue and price-list of supplies, tools and machinery for all branches of the mechanical trades. It is a book of 700 pages, 8 x 10¾ inches in size, bound in cloth, and contains illustrations, descriptions and list prices of a large variety of the goods referred to. It is stated that only such articles have been embodied in this book as are in the greatest demand, and as a large stock of nearly all the goods shown are carried orders will be promptly filled, and that they are also in a position to furnish any and all tools which may not be included in the catalogue. The work is well arranged, ample space being given to cuts, descriptions and list prices, with necessary information as to the size, capacity, &c., of the various tools and machines. A discount sheet has not been issued, but inquiries for prices will receive prompt attention. The last few pages of the book are devoted to tabulated matter containing useful information, and an alphabetical index at the end of the book affords means of ready reference. The catalogue will prove a valuable one, containing as it does so large an assortment of this class of goods in a compact and desirable form.

Trade Notes.

IN THEIR ADVERTISEMENT on another page Walbridge & Co., Buffalo, N. Y., call attention to their Iron Reservoir Vases, a few of the styles of which are illustrated. These Vases are described as made with a reservoir for water which is drawn up into the earth by capillary attraction, affording, it is claimed, a constant and even supply of moisture to the plants. Over 40 sizes and styles are put on the market.

THE PEERLESS WRINGER COMPANY, Cincinnati, Ohio, announce that they have purchased the entire plant of the Gooch Freezer Company, 28 to 38 East Ninth street, and will continue at the old stand to manufacture Ice Cream Freezers in all the styles and sizes heretofore made by the Gooch company, with increased facilities.

D. S. MORGAN & Co., Brockport, N. Y., have this season added to their line the Morgan Horse Dump Hay Rake, in 8, 10 and 12 feet sizes; Morgan Hand Dump Hay Rake, also in 8, 10 and 12 feet sizes; Morgan Horse Grape Hoe, intended for vineyardists and berry and orange growers. They advise us that they are having a gratifying sale of their Morgan Spading Harrow, which was put on the market about two years ago, and during the past three months have been running their plant night and day to keep up with orders. The officers of the company for the present year are George D. Morgan, president; William P. Morgan, vice-president; E. T. Lamb, secretary, and Henry S. Madden, treasurer.

THE A. J. TRACY COMPANY, 18 Cliff street, New York, who purchased all the patterns of the Higganum Mfg. Corporation and are making the full line of general Agricultural Implements formerly manufactured by that company, have added to their assortment Sugar and Brick Machinery in large variety.

THE EAGLE MACHINE COMPANY, Lancaster, Ohio, advise us that they have recently placed on the market a line of high grade Light Ventilator Grates. These goods are described as finished in japan and placed on the market at a price that already commands a gratifying sale.

C. E. WOODRUFF, jobber of Hardware and manufacturers' agent for Hardware Specialties, will remove on the 2d inst. to 235 Lake street, Chicago. Mr. Woodruff started five years since selling nothing but Barb Wire on commission. For this purpose ordinary office room provided him with all the facilities necessary, but he now finds that it will be very much better in conducting his business to take room on the ground floor. In his new location he will occupy the street floor, and will use the basement and the second floor for stock. He will carry a complete line of samples in the specialties which he handles. Mr. Woodruff pays particular attention to trade in large quantities, so that shipments are usually made to his customers direct from the factories. The facilities he will have will enable him to transact his business very much more satisfactorily and with greater dispatch in the future.

THE BICYCLE STEP LADDER COMPANY have opened their office in Chicago at 184 and 186 Clark street, which in the future will be the company's headquarters. Their factory is now located at Cedar Rapids, Iowa, and to that point all freight for them should be shipped.

F. E. MYERS & BRO., Ashland, Ohio, advise us that all their Double Acting Force Pumps, heretofore made with porcelain iron or polished iron are now made with seamless drawn brass-lined cylinders without change in price. They also refer to the special features in their line of goods as being the Patent Glass Valve Seat; Fine Cylinders; Novel Three-Way; Twin Spout Lift Pumps; Anti-Freezing Single-Acting Windmill Pumps; Regulator Pump; Spray Pumps; Steel Track and Carriers; Store Ladder, &c.

VOM CLEFF & Co., 105 Duane street, New York, have connected with them David Eastman, formerly of the Eastman & Krauss Razor Co. The above firm expect to largely extend their well-known line of Razors and Cutlery, and refer to their goods as being of superior quality and finish.

ETTE & HENGER MFG. COMPANY, St. Louis, Mo., have appointed W. H. Quinn & Co., 103 Chambers street, New York, sole Eastern agents for the Hardware and Plumbers' Specialties, Hydrants, Street Washers, &c., which they are making.

S. D. KIMBARK, 80 Michigan avenue, Chicago, has purchased from M. Greenbaum's Sons their entire stock of Iron, Steel, Wagon and Carriage Hardware, Carriage Wood Stock, Heavy Hardware and Blacksmiths' Tools, together with the good will of the business. M. Greenbaum's Sons will retire from the Iron business, and in a circular to their former customers they refer to the above house as an old and well established one and worthy of entire confidence. They also request that accounts due be remitted to them at 9 and 11 North Canal street.

JOHN G. ROLLINS announces that having severed his connection with John G. Rollins & Co., Limited, he has resumed the business established by him 26 years ago at 15 Whitehall street, New York. Mr. Rollins suggests that manufacturers desirious of extending their foreign trade will find it to their interest to correspond with him.

THE TRADE GENERALLY recognize the importance of an effective display of goods in connection with the attractive arrangement of the store. A well known house in Maine who are carrying on a long-established and successful business, refer, however, to the matter in this way: "We do not put on any style in our place. Our store is on a back street and we have never attempted any display. We depend on our large stock and low prices."

WE ARE ADVISED that U. S. Alderman has succeded to the Hardware business of T. E. Alderman & Sons, Nevada, Iowa, which was established by T. E. Alderman in 1853. T. E. Alderman will retire permanently from active business, while O. B. and E. T. Alderman are open for engagement in any business enterprise where a small amount of capital can be used.

It is Reported—

That Hudgins & Winder are building a Hardware store at Berkley, Va.

That Collins & Driscoll are a new Hardware firm at Cazenovia, N. Y.

That T. M. Parker & Co., Phillips, Ind., have sold their Hardware business to Phillips Hardware Company.

That S. A. Todd, dealer in Hardware, Thomasboro, Ill., has sold out to George Fiedler.

Advertising by Retail Hardware Dealers.

THE QUESTION, in what way the retail Hardware merchant can most effectively advertise, is one of vital importance, and claims the earnest consideration of every dealer. In the smaller towns a merchant is expected to help support the daily or weekly home paper by taking a space by the year, which he sometimes supplements by a quarter, half or full page advertisement, when seasonable goods demand especial prominence for a short time. It is often the case that the standing advertisement is neglected, and it is left to stand in its original form while summer suns and winter snows pass over it. It has not been uncommon to see heating stoves advertised when flies are troublesome, or attention called to Lawn Mowers when Snow Shovels were in demand. With increasing competition, however, such neglect is becoming more rare, and the live merchant realizes the necessity of making his advertising interesting and timely. In addition to newspaper advertisements some firms get out occasional circulars, heavy paper pocket memorandum books, yard sticks, fans, &c., which are judiciously distributed. Others select the day when crowds are expected to be in town for the circus, Fourth of July, Decoration Day, or the time of the annual industrial parade, to circulate advertising matter attractive in appearance with interesting reading matter. Among the farming communities such advertising matter is generally read and talked over, and will lie about the house for a long time, a constant reminder where "the most desirable goods at popular prices" may be had. In solving the advertising question Dickson & Co., New Castle, Pa., have recently issued the initial number of a 20 page illustrated circular, 9¼ x 11½ inches in size, called *Our Bulletin*. It is printed on a good quality of paper, with illustrations and descriptions of the goods, together with suggestions as to their quality and use. Each page contains from three to ten illustrations, arranged in an attractive manner with plenty of space for each. The first page is devoted to a chat with their customers, which we give in full as illustrating the methods of this enterprising house.

We don't blame the public for the reception generally given an advertisement, for to read the majority of newspaper advertisements and circulars sent out they are led to believe that the advertiser is giving them about two dollars for one, and with this idea we are prompted to offer you something somewhat different—simply a circular calling your attention to some of our goods, with illustrations of same.

Before going any further let us say that *we don't sell goods at or below cost*—never have and never will.

The public is getting tired of this below-cost business, and we don't blame them, for the veriest greenhorn living knows that the merchant who sells him goods at or below cost is bound to make it up on some other sale.

We don't buy our Mouse Traps or Fish Hooks in carload lots. Let us take this occasion to knock in the head this great carload story that some dealers try to impress the public with.

Fence Wire, Sewer Pipe and Oliver Chilled Plows are the only goods we buy in carload lots, and we feel safe in saying that not over a half a dozen full carloads come into the entire Hardware trade in New Castle in a season.

The head of our firm don't open up and sweep out to save clerk hire, either, and yet with several other disadvantages in shape of having to pay rent, &c., we have managed to stick in the Hardware business since 1867; at which time our firm was established by Isaac Dickson, our senior member.

To those who are unacquainted with our firm and place of business (though we flatter ourselves that there are but few in the county, as the name of Dickson has been associated with the Hardware business for the past quarter of a century), we will say that from our little store "next door to the post office," which we occupied in 1867, we have steadily advanced until we now occupy the three-story brick building formerly occupied by Terry Bros., which is without doubt the finest Hardware store in this part of the State. It is 24 feet wide and 180 feet deep, with warehouse 24 x 90.

The first floor is occupied by a general stock of Shelf Hardware, Tinware and House-Furnishing goods.

On this floor we carry a line of goods to which we wish to call your particular attention. Namely: The *Good Luck* Stoves manufactured by Baldwin & Graham of this city, for which we are sole agents for the county. Our stock is very complete and is in charge of Howard D. Morrison and C. Ed. Smith.

On this floor is also shown the Sherwin-Williams prepared Paint, so well known throughout the county.

It has stood the test of ten years and sales are increasing every day.

Another department is that of Harness. Ed. Smith runs this end of the business for us.

We can give you anything in Harness, and at every price, even as low as $8 a set, but we don't advise you to go that low.

Our "Dickson special" is without doubt the best Harness for the money in the world. Ask for it.

Passing to our Warehouse we find the Oliver Chilled Plow, and what farmer doesn't know "the Oliver?"

The Hartman Fence is also in this department. As a low priced steel picket Fence we know of nothing better.

We will be pleased to quote prices, either erected by ourselves or purchaser.

On the second floor we carry our extra stock of Harness, Collars, Tinware, Step-ladders, &c., while on the third floor is our stock of Wood Work, Wheels, Shafts, &c.

In this line we are the acknowledged leaders in this section. This department is in charge of William H. Vance, and is complete in every respect. Beside Wood Work, we handle Carriage Hardware and Blacksmith Supplies of every description.

Space on this page permits us to call your attention to a few of our *leading* articles. By looking over the following pages it will give you a better idea of our stock, or better still, come in and see the goods and get our prices, and if you are not already a customer, give us a chance to make you one. Respectfully yours,

DICKSON & Co.

The foregoing will doubtless be suggestive to many of our readers as to methods which may be adopted in calling attention to the lines of goods which they are handling.

NET PRICES.

What Merchants Say.

IN DISCUSSING the question as to the system of lists and discounts by which Hardware is so generally sold, a well-known house in Louisiana sum up the matter in the following terms:

We have read the articles in *The Iron Age* regarding net prices on Hardware, and are surprised that any small jobber or retail dealer in Hardware should advocate net prices. For the large jobber the net price system would probably answer very well. Many an old traveling man knows that his house wants goods sold at net prices, and that he has been instructed to sell at a net price whenever he could do so in order to make a profit. We believe this subject was brought up by the jobbers, who are the only ones that can expect any advantage from the change.

The manufacturer may go to the trouble and expense of changing his entire line to net prices and reap no harvest in the shape of increased profits, because the jobber will very soon detect any irregularity in the prices of different classes or sizes of goods.

It seems to us to be an effort of the jobbers to force the retail dealers into paying them a better profit. Retail dealers are the ones who suffer in the end; in many cases unjustly. For instance, cheap Union Counter Scales are packed one in a case and shipped by manufacturer to jobber and received by him in apparent good order. The jobber ships them and sends bill of lading signed in good order, we receive them from carrier with case in perfect condition to all outward appearance. Upon opening we find the Scale broken, so as to render it useless. We make claim on carrier, who refuses to pay damages, because delivered in good order. Jobber declines to make payment because delivered to carrier in good order. The damage was evidently the result of careless packing by manufacturer, but the retailer is compelled to stand the loss.

We are for lists and discounts, and would always give preference to those who stick to them.

Writing on the same subject, a North Carolina house doing a wholesale and retail Hardware business adduce the following arguments against the substitution of net prices, and point out the inconvenience that would thus be entailed without substantial gain:

I have read with much interest the articles on net prices. I have always been decidedly in favor of lists and discounts. I admit net prices are convenient for salesmen in quoting prices to dealers or buyers not so thoroughly posted, enabling them to more readily determine the purchase of certain classes of goods, but a printed net price-list is a dangerous instrument to the trade when it falls into improper hands. Prices are made known, and consequently lowered in order to hold trade. I have had instances of this kind to happen, particularly in the Carriage Goods line. The Coach shops often show me price-lists from manufacturers, which are the same prices they make us. Such goods as Gears, Springs, Leather, &c., which are generally quoted at net price, and many other articles have been brought to very small profits by the net price plan, such as Axes, Barb Wire, Rope and Cordage, Nails, Shot, Ammunition, Wringers, Guns, Pistols, &c. In this respect I cannot see why any one can argue that net prices will afford better profits. If there were no other objections to net prices, the

detail, labor and time consumed in making prices, fluctuation of the market, cost of production of goods, which are sometimes frequent, would kill it. There must be some base to figure from, by either manufacturer or jobber. A base price answers a good purpose for some classes of goods, but I have frequently seen mistakes made in adding the extras, and it is not so easily understood by the average customer.

I have for a long time wondered why the manufacturers have not, both in making price-lists and packing goods, adopted a plan of listing, by one, ten, or hundred. There would be an immense amount of tedious labor overcome if the dozen practice was abandoned and the range of discounts not so multiplied, but in this respect "Ladd's Discount Book" is of inestimable value.

If everything was listed by the piece or hundred (as is now by the dozen), such as Trace Chains, Bolts, Scales, Axles, Steam Fittings, &c., one could at once know what one, ten, or 100 would cost, net, with one discount. To figure such as 6½–6–4 Trace Chains, list 64 cents, discount 60 per cent., 64 × 40 = 2560, shows price for one pair, ten, or 100 pair; and, again, 100 2 x ¼ Norway Carriage Bolts, list 3.40, discount 80 per cent., 340 × 20 = 6800, gives at a glance cost of one, ten, 100 or 1000 Bolts, and so on for any class of goods.

I invite the manufacturers' attention to these suggestions, and hope they will give their views upon the matter.

The following careful review of the question is from a manufacturer in Pennsylvania:

On this subject there seems to be a great variety of opinions. This is shown in different classes of goods by the manufacturers price-lists and discount sheets, some discounting only 10 per cent. and others all the way to 75, 10 and 5 off. We have seen discount sheets showing 75, 10, 5 and 10. Now a price-list on which discounts are made standard goods to that amount is superlatively nonsensical, ridiculous, pernicious and prejudicial to the interest of manufacturer, jobber, retailer and consumer. To illustrate, we will consider three lines of goods—Wrought-Iron Pipe and Fitting, Saws and Nails. Most of the dealers and users of Pipe and Fittings know that the price-list alone without discount sheet is no guide for either buying or selling. As to Saws, there is scarcely a saw mill or lumber man but knows the discount on Saws. So the only way for the jobber or dealer to get pay for handling Saws is by a special discount to him. Nails are quoted differently and fairly, so the consumer may not be misled and cheated in purchasing.

Those price-lists giving prices two, three or four times the real value do not facilitate sales for the manufacturer, but open wide the door for cheating, fraud and extortion. The dealer may show the ignorant or uninitiated his price list and apparently sell very low, but at the same time is robbing his customer. Reason, justice and common sense cry aloud for a revision of the price-lists in most lines of manufacture, not only in Iron, but all others having such exaggerated lists as above referred to. They bear on their face *prima facie* evidence of fraud all along the line of trade from manufacturer to consumer. Suppose we go to a farmer to buy a cow, and ask price. He tells us his price is $100, but he will discount 75 and 10 per cent. for cash. We might reasonably conclude that he is either a knave or a fool. We know nothing of the value of the cow from his statement, whether worth $20, $40, $60, or $80. She may be worth $15. Such a mode of doing business, to an intelligent and thinking mind, is absurd and wrong. We say boldly, without fear of logical or successful contradiction, that it is wrong and an outrage on the consumer. It excites a horde of middlemen, who live and grow fat financially out of discounts at the expense of honest consumers. Whose interests should we justly consult in this question of prices—the interests of the honest consumer or the speculative dealer? If the consumer, let there be reasonable and fair lists. If the speculator, then we must continue the exaggerated and speculative lists.

There is no sound reason why Nails should go on the market with practically no discount, and Iron Pipe with 70 and 10 per cent. off.

We speak on this subject somewhat understandingly, having been since 1850 continuously in manufacturing, and dealing to some extent in a considerable variety of goods pertaining to a general jobbing business. We would suggest and recommend price-lists on all goods based on actual cost, to which add reasonable profit to the manufacturer and consumer for putting on the market and in hands of retailers, to be known as retail list, from which the discount should never exceed 30 per cent.

Plant of Reading Hardware Company.

THE PARENT of the large establishment of the Reading Hardware Company, Reading, Pa., which to-day occupies a group of imposing buildings covering 4 or 5 acres, and gives employment to more than 1000 hands was a modest blacksmith's shop, which was erected 40 years ago by William Harbster, the founder of the firm, on the very site of the present plant. With the co-operation of his brothers, Matthan and John, he commenced the manufacture of the commoner articles of Hardware on a necessarily small scale, under the name of Harbster Brothers. A few years later the brothers were joined by William C. Griscom, who brought with him both capital and experience, when the name of the firm was changed to Harbster Brothers & Co. By dint of perseverance and indomitable energy the comparatively insignificant nucleus grew by gradual accretions into a considerable manufacturing concern; new buildings and improved machinery being added as the exigencies of an increasing business required them, until in 1886 the existing firm was incorporated under its present title.

A disastrous fire, which occurred in July, 1888, caused the almost total destruction of the works, but in a comparatively short time the present extensive and commodious buildings were erected, containing vastly improved facilities, and a much greater capacity for manufacture and storage than their predecessors. The buildings now in use comprise three five-story brick-built structures, one used for warehousing finished goods, and the others housing the various manufactory departments, also a two-story japanning house, iron and brass foundries, annealing house, engine and boiler house, blacksmiths' and carpenters' shops, sand houses, paper box factory, and various offices, &c. In addition to these main buildings an adjoinig block contains another foundry and factory and packing case factory, &c. To these is just being added a large four-story building with working basement, covering a ground space of 160 x 45 feet, intended to meet the requirements of additional room for the expansion of business in connection with the better lines of goods, and for the lock and burnishing departments which have been somewhat crowded out of late in the existing buildings. This house is being rapidly pushed forward, and when complete will form a handsome and useful adjunct to the working plant. A 300 horse-power engine will be put into it.

The factory is divided into some 30 different shops or departments, each under the charge of a foreman, who, under the general superintendence of one of the managing officials, arranges and is responsible for all the work undertaken in his own division. The workmen are paid on the piecework system, and it is the foreman's task to judge and report the amount accomplished by each individual, payments, varying with the market prices, being made by results according to his report. This system has been in full force for over 25 years, and has worked to the complete satisfaction of both employers and employed. The just and liberal treatment of the workpeople and the pains taken to secure their comfort and convenience in every way have resulted in marked benefit to all parties, so that the constant change in factory hands is reduced to a minimum, and the management has been able to create a corps of skilled operatives of their own training, which forms a chief factor in the success of the whole enterprise and conduces markedly to the maintenance of a high standard of excellence in their productions.

The accompanying copy of a form used in the Foundry department will give some idea of the system pursued, and which has stood the test of many years' working. A sheet of this description is kept up for each man employed in the shop, the several columns being filled in each morning by the foreman, detailing the previous day's work, and forwarded by him to the office, where the amount earned that day is filled in on the total columns. The document is then returned to the foundry and kept in a rack, open at all times to the inspection of the men, who can see at a glance the amount of their earnings day by day. This system is in a modified form carried out all through the works and gives general satisfaction. Wages are paid weekly. A point which cannot fail to specially strike the observer is the singular order and cleanliness which seem to pervade the entire establishment. The shops are unusually well lighted by large windows placed at a distance of 5 feet apart on all sides of the buildings, and great attention is paid to the heating and ventilation, so that the dense vitiated atmosphere so frequently found in similar places is obviated, and the health of the workers greatly benefited.

One wonders at first how it is possible to keep the atmosphere so pure and free from dust, until one is shown a cunningly devised system of receivers fixed under every lathe and wheel, into which all the emery and metal dust and dirt is attracted by a draft, and carried off by means of pipes into a central exhaust vat, instead of escaping into the air and being inhaled by the workmen, as is too often the case. This simple plan conduces greatly to their health and comfort, and keeps the air sweet and clean, the result being that better work is done. Each individual is responsible for the neatness of his own particular portion of the shop, and a healthy spirit of emulation causes them to take a pride in keeping it clean and tidy—a fact which is very noticeable in every department. The buildings are furnished throughout with a steam heating apparatus, the waste steam from the engines being utilized for this purpose; it is drawn through the heating apparatus, and after serving the double purpose of furnishing power and heat, is returned in a condensed form to the boilers to be used over again, a considerable economy in fuel being thus effected. The shafting throughout the establishment is so constructed that by means of a patent clutch the machinery in each separate department can be stopped and started at will with the greatest ease—a great convenience in case of accidents;

and during the past year the engine has been stopped but twice for any cause. The most complete precautions against fire have been adopted, and each room is practically isolated from the others by fireproof iron sliding doors.

The foundries are a source of particular pride to the managers, being models of cleanliness and efficiency. They are spacious, light and well ventilated, and exceedingly fine castings are turned out. In the largest one the cupola is situated in the center, so that the molten metal can be carried to any part of the room with great quickness, and much labor and time are saved. About 4000 tons of pig iron and 500,000 pounds of copper, besides other metals, were used last year—the iron being obtained from furnaces in Virginia, Kentucky and Ohio, and the copper from the lakes and Baltimore. An average of 5 tons of castings is the daily output; but this figure conveys no idea of the actual quantity, until it is understood that the separate articles cast are of such small size as to weigh from but ¼ ounce to 1 pound, when the amount will be seen to be very large. In the cleaning house the castings are relieved of the sand and drift adhering to them by being passed through the Henderson principle; the cast iron is passed through it and treated with hydrogen and steam, afterward being placed in a retort and undergoing an application of carbon, the whole process taking about two hours The result is a hard coating of an ebony color with perfectly smooth surface, and absolutely impervious to rust. Almost any form of iron can be treated by this process, but it has been found particularly suitable for ornamental door and sash fittings, handles, escutcheons, plates, &c. The ware has found great favor with the trade, and the demand for it is increasing so rapidly that the company will soon be forced to provide themselves with enlarged facilities for producing it.

The polishing room for finishing the iron and brass goods contains a vast number of busy wheels, which with the expert manipulation of the workers, impart a highly polished surface to the metal articles submitted to them.

The electro-plating room is one of the largest in the country, and contains 54 50 gallon solution tanks, run by four large Hanson, Van Winkle & Co.'s dynamo-electric machines Here all the varieties of plated ware are manipulated.

Large quantities of plated ware are now being turned out from this establishment, where the new designs and patterns are conceived and executed by experts. All the beautifully diversified decorations on the art metal work take their origin here at the hands of skilled artists, many of the intricate patterns absorbing the work of many days, and even weeks in some cases. This room may be regarded as the barometer of the whole concern, as slackness of work here may be safely assumed to indicate approaching slackness in most of the other departments; while on the other hand, a healthy pressure here, such as exists at present, prognosticates most surely ample work for every other branch for some time to come.

Besides the departments which have been briefly mentioned above there are many others to which exigencies of space alone prevent allusion except by name, such as the press, knob, butt, pulley, drilling and finishing shops, laboratory, &c. Suffice it to say that the same spirit of efficiency and ingenuity in arrangements and management pervade the whole. The storage warehouse is a roomy building of four stories, measuring 200 x 100 feet in length and breadth. Here the manufactured articles are delivered on completion, and are shelved and stored to await shipment. The annual sales of the

Date, ... 189.... Name, ... No. .....

No. of Molds Ordered	Description.	Molds Made.						Number of Good Molds.						Total.	Price.	Amount	
		Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.			Dolls.	Cts

Form for Foundry Department.

patent dustless churns, of which 40 are in constant use, the dirt being drawn from the churn by pipes and not a particle being permitted to escape into the room. From this place the castings are distributed to their various destinations, as they may need drilling, japanning, electro-plating, or otherwise finishing. In the annealing furnace the process, which not long ago used to be a tedious one of 48 hours or so, can now be carried out with equal efficiency in ten minutes by a peculiar system of hot blasts, causing incalculable saving in time and labor.

The japanning house is a two story brick building standing rather apart from the remainder of the plant because of the inflammable nature of the materials used in it. This process is usually an extremely dirty one, but here it is managed in a wonderfully cleanly manner. The articles are japanned and baked in ovens under an intense degree of heat, as much as 700 degrees being attained. Adjoining this is another room where brass and iron goods are coated with a celluloid varnish and baked over a slow fire. This varnish is a most effective preservative, and so hard as to be practically unscratchable.

In a separate structure there has lately been built a furnace designed for the preparation of the rust-proof ironware, on which the company lay especial stress as being their newest departure, and promising to be a most popular branch of trade. The furnace is on the Gasner being in great demand for door and window fittings in newly-built houses. The varieties of surface finishing are numerous, and are classed as "plain bronze," "antique copper bronze," "dark steel bronze," "antique brass," "natural brass," "natural copper," "mottled copper," "gold bronze" and "oxidized silver," with the black rust-proof iron already mentioned.

The Lock department, which forms perhaps the most important branch, occupies a large portion of the works, and it is principally owing to the pressure of business here that the new building before mentioned is being erected with the view of providing ampler space for the lock manufacture, the magnitude of which may be appreciated from the yearly output, which now reaches nearly 180,000 dozen of these articles. On the company's own special type, the "Vassar" cylinder locks and latches, a great amount of time and ingenuity has been expended, resulting in the production of a very perfect article It is on the pin tumbler principle, with two cylinders, each having ten pins, which are raised in perfect alignment. The adjustment of these pins is very accurate, and it is calculated that over 1,000,000 changes can be made in them; yet a master key is constructed which can unlock the entire series.

One of the most interesting rooms, and about the most important in the whole factory, is that occupied by the molders, company average, we are advised, about $1,000,000. A large market for the firm's products was of late years opened out on the Pacific Coast, and considerable shipments are being made from New York to San Francisco round Cape Horn. The States and Territories of the Northwest are also, we are informed, coming in largely as consumers of their hardware, and the field in that direction gives large promise.

The works are well supplied with transport facilities, as three lines of railroad, the Philadelphia and Reading, Pennsylvania Railroad, and Wilmington and Northern run directly past their doors, and side communications into the works themselves are laid down.

The Reading Hardware Company as at present constituted is composed of the following members: President, Matthan Harbster; vice-president, William M. Griscom; treasurer, Henry C. England; secretary, John E. Harbster, and is managed by a board consisting of M. Harbster, Wm. M. Griscom, John E Harbster, Isaac G. Treat and Jacob Fricker.

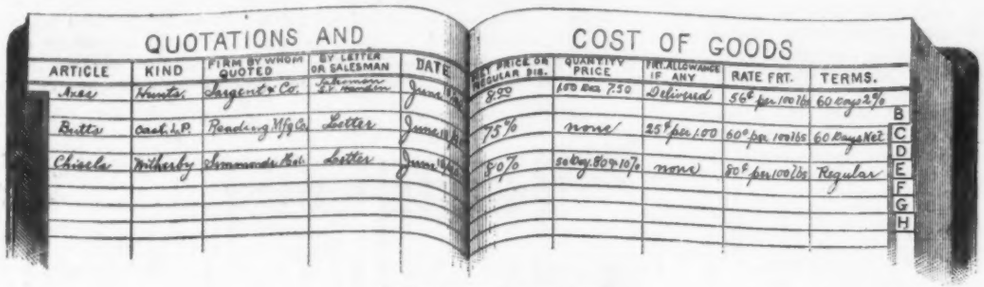
The president is also general manager of the manufacturing department, where he is assisted by J. E. Harbster and I. G. Treat. The whole of the mechanical portion of the concern is under the immediate and efficient direction of these three practical gentlemen, to whom is due in large measure the success of this company.

Quotation and Cost Book.

FROM a well-known Hardwareman in Tennessee we are in receipt of the advices given below in which explanation is made of his method of recording quotations and the cost of goods. In the illustration which is given, it will be observed that Axes, Butts and Chisels are shown on the same page, but each of these articles would, of course, be put on different pages, according to the initial letter:

Having given the subject of preserving quotations some little thought, I desire to submit to you a plan by which quotations can be easily as well as systematically kept. The arrangement of a book which I use in carrying out this plan is shown in the accompanying illustration. I have for some time been filing quotations away in an ordinary letter file, but have often been delayed in looking up quotations, owing to the fact that in the multitude of quotations constantly coming in I have frequently forgotten the names of firms by whom quotations were made. You will readily see how a book of this kind would obviate any such trouble and delay, as each quotation is recorded in the book and reference to the letter could be easily made, no matter how many different articles may be quoted in the same letter. It is my intention to have in use, in a system of this kind, a separate file in the letter cabinet to be marked QUOTATIONS and used for that purpose exclusively. It would not be necessary for any one using this system to go to the expense of providing a cabinet letter file, as only one ordinary file is required. A book of this kind could be used for three purposes, viz.: For quotations, whether by letter or through salemen; cost of goods after they have been purchased, by recording prices in book from invoice; and for salesmen on the road or in the house to sell from. In the case of recording cost from invoice the word "invoice" should be inserted in the fourth column marked "Letter or Salesman."

I have tried to use a catalogue to keep a record of costs, but I find no little objection to that system, owing to the fact that there are only a very few houses who issue catalogues who carry a full line of goods of every description, and in using a small catalogue for the purpose, it is necessary to paste in a great many lists, cuts, &c., while a catalogue, such as Simmon's Hardware Company, is too large to be handled frequently, as it is necessary to look up the cost of articles which are desired to be referred to frequently. By using this system which I submit we would always have our prices before us, as well as the grade and make, and by using the discount or net price and then referring to any catalogue for illustrations, lists, &c., we would be able to arrive at the cost of goods in a very short time. This appears to me to be a good system.



Quotation and Cost Book.

Manufacturer and Consumer.

THE FOLLOWING reference to relations between the dealers and manufacturers is from a prominent house. It will be observed that our correspondent refers to the gradual disappearance of middlemen and anticipates the time when direct transactions between manufacturers and consumers of goods will be much more general than at present. The trade will be disposed to regret any tendency they may observe in that direction, and to take any measure that may be feasible to protect their own interests:

In our opinion, a great change has already occurred and is still going on in the relations between dealers (whether jobbers or small houses) and manufacturers. There was a time when old established substantial firms and vigorous young offshoots sought the agencies of well-known manufacturers, being induced to such course by the feeling that they would handle goods of high quality, would gain some standing from the connection, and also some advertising and general co-operation. Here the relation of the principal and agent came in, accompanied by the loyal allegiance of the agent to the principal and a vigorous warranty of the goods handled. In a minor degree the same thing happened between dealers and manufacturers. This has so changed that it is rare now to find either agent or dealer with faith or courage enough to defend the quality of his goods. Instead, agent and dealer stand ready to supply whatever is called for, no matter how poor the goods or how mistaken the demand. One reason for this is that business has grown so largely as to vastly increase the variety sold and the number of young clerks who handle. Neither proprietor nor clerks have time to learn the real qualities of their goods, and the seller fails to supply the buyer with his positive knowledge of such goods. With every dollar's worth sold by the standard manufacturer is still sold all that manufacturer's skill and experience; but with the dealer, *caveat emptor* is the motto. The buyer must take his own risk, the seller knows little about his goods. In one branch of our own business it has become almost a universal assumption that all makes of Wheels are of equal value, yet the very people who make this assumption would think it ridiculous to assume equality of value in butter, whisky, shoes and clothing. Under this state of affairs the middleman has been of late years an increasing demoralizer of trade, undermining the general reputation of all goods, destoying all faith in intrinsic quality, and dragging prices down to a point that is profitless to every one. It is our own belief that before many years a great variety of goods now handled by middlemen will be sold directly by the maker to the user.

A Convenient Nail Counter.

WE ARE INDEBTED to Manwaring & Co., Imlay City, Mich., for the accompanying Nail counter, as used by them, and upon which they pride themselves. The section of the counter, as shown in the cut, indicates that the Nail bins occupy only the upper part of the counter, the spaces below being used for other goods. Each Nail bin is 14 inches deep, 14 inches wide and 30 inches in length, and holds two kegs of Nails. The counter top is made with lids or sections along the front, which are taken off when necessary to put Nails into the bins. The entire top of the counter is made of alternate strips of cherry and maple, which when finished makes a neat piece of furniture. The floor of the Nail bins has quite a slope

A Convenient Nail Counter.

from front to back, which gradually works the Nails toward the opening of the bins. Along the entire length of the counter inside and just below the Nail bins is a slotted strip into which the edge of the hopper fits, which very materially assists in holding the scoop, especially when 20 pounds or more of Nails are to be weighed at one time. The counter is 26 feet long, 2¾ feet wide on the top, 2¼ feet wide at the base, and contains 20 bins. It is remarked that the trouble with a Nail counter that lets the Nails clear down to the floor is that the low bending over to fill the hopper and then lifting it up to the top of the counter becomes back-aching work. After having had the counter is use for a year the above firm see no way in which it could be improved.

Price-Lists, Circulars, &c.

MARIETTA HOLLOW WARE AND ENAMELING COMPANY, Marietta, Pa.: Plain, Turned, Tinned and Enameled Hollow Ware, Refrigerator Boxes and Cooler Wells. Illustrations and prices are given of these goods. The manufacturers state that they are prepared to make Tanks and Cooler Wells in other shapes and sizes than those shown

E. C. MEACHAM ARMS COMPANY, St. Louis, Mo: Circular 494, Guns, Loading Tools, Hunting Coats, Gun and Rifle Covers, Decoy Ducks, Sights, Bicycles, &c.

MATTHAI, INGRAM & CO., Baltimore and New York: Summer and new goods. Illustrations and prices are given of Keyless Fly Fans, Water Coolers, Japanned Tubs, Pieced Ware, Stamped Ware, Oil Cans, Automatic Cookers, Fly Traps, Minnow Pails, &c.

KANKAKEE MFG. COMPANY, Kankakee, Ill.: Kankakee Hardwood Refrigerators, Sideboards, Ice Chests, &c. Illustrations of these goods are given, showing a variety of styles and sizes. The Sideboards are especially elaborate in design and finish, with artistic trimmings These goods are described as all being made of thoroughly kiln-dried solid oak, with an inner case or body of kiln dried, odorless wood, matched air tight and lined throughout with zinc. The two complete cases, one inside the other, are firmly fastened together, and form a dead air space between the walls, and in connection with their fiber filling it is stated, form an insulator and non-conductor of heat and cold. The flues are protected from dirt; the ice receptacle has a metal rack; the ice and provision chambers are lined with zinc; the doors have three overlapping sabbets; the feet are a solid extension of the body, and the castors have a spring rocket so the wheel cannot fall out.

SILVER & CO., New York: Oil, Gas and Alcohol Automatic Gas Lighters, Bread Toasters, Kitchen Utensils and Household Specialties. These goods are shown in great variety.

WALBRIDGE & CO., Buffalo N. Y.: Baseball Supplies. Illustrations and prices are given of Spalding's Balls, Chest and Body Protectors, Bats, Catchers' Masks, Irwin's Catchers and First Baseman's Mitt and Amateur Infielders' Gloves.

W. W. LAWRENCE & CO., Pittsburgh, Pa.: Fine Paints and Varnishes, White Lead and Painters' Supplies. The above firm make a specialty of Whiting's Paint Brushes.

THE MALLORY-WHEELER COMPANY, New Haven, Conn, and 64 Reade street, New York: Appendix, January, 1892, of Bronze Goods. Illustrations and prices are given of anti-friction mortise front door Locks; Roses and Escutcheons combined; Store-Door Handles, Door Knobs, Electric Push Buttons, Bell Pulls, Sliding-Door Escutcheons, Druggists' Drawer Pulls, Burglar-Proof Sash Locks, Storm-Door Pulls, Letter Box Plates, &c.

THE CHAPMAN HARDWARE COMPANY, Toledo, Ohio: Cycling Sundries. The company state that "this is a good catalogue; the articles enumerated herein are all good. If you handle anything in this line, we would be pleased to hear from you, and will endeavor to show you that we are a good firm." The pamphlet is attractive in appearance, tastefully arranged, with illustrations and prices of the sundries given.

J. B. KAERCHER, Pittsburgh, Pa.: Bicycles. The Bicycles illustrated for the coming season are: Ramblers in six styles, Irwell Roadster, Overland, Diamond Frame Sylph, Rover Star, New Diamond Frame Lever, Lovell's Diamond, Queen City, Peerless, Duquesne and Keystone. These together with Tricycles and sundries complete the catalogue.

Glass Rack.

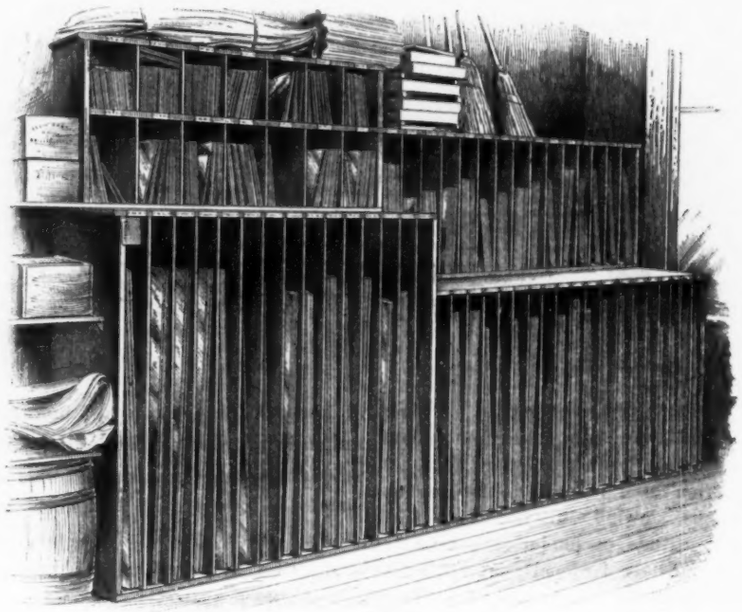
WE ARE indebted to F. A. White, Cambridgeport, Mass. for a description of the Glass Rack which is in use in his store, an illustration of which is given herewith. The entire hight of the rack is 64 inches, and the length 10 feet. It is built of 1-inch stuff, with partitions ⅝ inch thick. The rack is 38 inches in depth, and the largest spaces accommodate Glass up to 48 inches in length, while the second largest spaces take 36-inch lights. The other openings are arranged for the smaller sizes, the entire rack holding 64 sizes of Glass.

THE ANNUAL MEETING of the stockholders of the Yale & Towne Mfg. Company was held at the company's office at Stamford, Conn., on the 21st inst. The following Board of Directors was elected for the ensuing year: Henry R. Towne, Schuyler Merritt, George E. White, M. F. Merritt, Beauveau Borie, Thos. F. Keating, Floyd H. White, Walter Ferguson and William F. Donovan. At a meeting of the Board of Directors, held on the same date, the following officers were elected: Henry R. Towne, president; Schuyler Merritt, secretary; George E. White, treasurer; Thomas F. Keating, assistant treasurer, and William F. Donovan, general manager.

Exports.

PER BARK GIOVANNI S., MARCH 30, 1892, FOR CAPE TOWN, SOUTH AFRICA.

By L. D. Crossmond & Co.—17 cases Agricultural Implements.
By W B. Fox & Bro.—3 cases Hardware, 1 case Agricultural Implements, 1 box Hardware, 1 bundle Handles.
By Sherman & Lyon.—11 cases Lamp Goods.
By Reed & Barton.—4 packages and 4 casks Silver Ware.
By Sherman & Lyon.—3 crates Churns, 1 case Horse Clippers, 1 case Wrenches, 4 cases Washing Machines, 1 case Hardware, 13 cases Bird Cages.
By R. W. Forbes & Son.—73 kegs Nails, 1 case Tinware, 13 cases Axes and Hammers, 6 bundles Hardware, 8 cases Handles.



Glass Rack.

By Haase & Vaughan.—1 case Wringers.
By H. W. Peabody & Co.—651 packages Agricultural Machinery, 32 packages Farming Implements, 4 dozen Snaths.
By W. H. Crossman & Bro.—10 cases Hardware, 10 cases Agricultural Implements, 1 case Carriage Hardware.
By Strong & Trowbridge.—1 case Locks, 1 crate Fly Traps, 1 crate Trucks, 1 case Handles.

PER SHIP XEINA, MARCH 31, 1892, FOR SYDNEY, N. S. W.

By Collins & Co.—2 0 boxes Axes.
By Manhattan Brass Company.—64 barrels Lamp Goods.
By Cleveland Axle Mfg. Company.—91 cases Axes.
By Hecla Powder Company.—40 cases Cartridges.
By B. F. Avery & Sons.—22 packages and 5 boxes Plows.
By R. W. Forbes & Son.—4 cases Hardware, 1 case Axles.
By Union Nut Company.—12 packages Iron Bolts.
By Henry Disston & Sons.—1 case Saws, 8 cases Hardware.
By Rogers, Smith & Co.—4 boxes Silver Ware.
By R. H. Dana & Co.—125 cases Handles, 3 cases Axes, 1 cask Blocks.
By H. W. Peabody & Co.—14 packages Hardware, 6 cases Bolts.
By H. H. Moore.—1 case Tinware. 3 cases Bolts, 1 case Lampware, 4 packages Hardware, 1 case Rat Traps, 17 cases Axes, 3 cases Picks, 10 cases Axes, 3 cases Hatchets, 10 cases Axes, 1 case Hardware.
By S. Hoffnung & Co.—8 cases and 149 packages Hardware, 6 cases Lamps, 3 cases Hardware, 2 cases Brushes, 1 case Tools, 1 case Thermometers, 7 cases Hardware, 43 cases Axes, &c., 12 cases Ammunition.

By Arkell & Douglas.—1 case Sporting Goods, 9 barrels Wire, 3 cases Hardware, 15 cases Axe Handles.
By W. H. Crossman & Bro.—1 case Tire Benders, 2 cases Corn Drills, 1 case Pump Parts, 2 Tire Benders, 3 barrels Cow Bells, 5 cases Cages, 8 cases Handles, 6 crates Corn Shellers, 1 case Drills, 2 dozen Mowers, 1 bundle Springs, 64 boxes Axes, 5 crates Handles, 24 cases Hardware, 64 packages Hardware, 7 cases Cartridges, 1 case Primers, 3 cases Rifles.

PER SHIP GLOAMING, MARCH 31, 1892, FOR SIDNEY, N. S. W.

By Hartley & Graham —1 case Fire Arms, 1 case Cartridges and Covers, 5 cases Cartridges, 1 case Empty Primers.
By Winchester Repeating Arms Company.—3 cases Guns, 3 cases Tools.
By W. K. Freeman.—3 cases Guns, 10 cases Cartridges, 5 cases Hardware, 1 case Drills, 12 cases Iron Axles, 2 cases Hand Trucks, 2 cases Hardware.
By Winchester Repeating Arms Company.—8 cases Guns, 2 cases Tools, 7000 Cartridge Shells, 100,000 Primers.
By R. W. Forbes & Son.—18 cases Cork Pullers, 1 case Tools, 12 cases Lampware, 19 packages Hardware.
By W. & B. Douglas.—9 packages Pumps.
By E. W. Harrison.—1 box Hardware.
By Simpson, Hall, Miller & Co.—16 casks Plated Ware.
By Edward Miller & Co.—7 packages Lamp Goods.
By Atlas Tack Company.—21 boxes Nails, 3 boxes Tacks.
By Rogers, Smith & Co.—9 boxes Silver Ware.
By Fairbanks Company.—39 boxes Scales.
By Alfred Field & Co.—14 cases Axles.
By F. & J. Meyer.—10 cases Axe Handles, 1 case Pumps.
By McLean Bros. & Rigg.—13 cases Wringers, 7 cases Whetstones, 21 cases Agate Ware, 2 cases Scales, 3 packages Bells, 4 cases Hose, 2 cases Bird Cages, 2 cases Rat Traps, 1 crate Mop Holders, 11 cases Handles, 8 cases Picks, 2 cases Bird Cages, 1 case Hatchets, 1 case Gauge Glasses, 2 cases Handles, 2 bundles Twine Holders, 13 cases Rifles, 2 cases Cartridges, 3 cases Hatchets, 10 cases Mattocks, 2 cases Rakes, 1 case Bells, 3 crates Churns.
By Strong & Trowbridge.—14 cases Handles, 1 case Hardware, 1 case Rat Traps, 2 cases Axes, 1 bundle Hoes, 1 keg Emery Wheels, 1 case Lemon Squeezers, 3 crates Boring Machines, 2 cases Snaths, 5 cases Bolts, 1 case Hammers, 2 cases Chucks, 4 cases Nails, 1 case Locks.
By A. S. Lascelles & Co.—1 case Drills, 17 cases Lanterns, 12 cases Scales, 5 cases Rifles, 1 case Gun Implements, 54 cases Axe Handles, 1 case Saw Sets, 6 crates Ladders, 1 case Hoes, 1 case Forks, 2 cases Blocks, 1 case Oilers, 3 dozen Razors, 12 gross Lead Pencils, 1 case Primers, 9 cases Cartridges.
By Ilsley Doubleday & Co.—3 cases Hardware, 3 cases Tiles, 1 case Fire Arms, 1 case Wire Goods, 4 cases Hardware, 1 case Hardware.
By Coombs, Crosby & Eddy Company.—3 cases Tackle Blocks, 16 cases Tools, 2 barrels and 2 packages Lanterns, 1 case Hoes, 8 cases Handles, 7 crates Churns, 30 cases Wringers, 36 cases Tools, 19 packages Grindstones, 3 packages Scales, 1 crate Money Drawers, 1 case Jail Locks.
By W. H. Crossman & Bro.—13 boxes Hatchets, 6 crates and 9 cases Handles, 8 cases Loaded Shells, 5 cases Metallic Cartridges, 1 case Rifles, 13 boxes Hatchets, 2 crates Handles, 15 boxes Axes, 13 cases Hardware, 2 cases Mattocks, 1 case Hoes, 3 cases Handles, 2 boxes Axes, 29 packages Hardware, 1 Tire Bender, 1 box Hardware, 7 cases Oil Stones, 2 cases Axles, 12 packages Hardware, 3 cases Carpet Sweepers, 15 cases Iron Nails, 7 cases Corn Mills, 43 cases Plow parts, 36 packages Hardware, 1 case Revolvers, 3 cases Agricultural Implements, 1 case Cutlery, 1 case Air Guns and Slugs, 1 case Forges, 11 packages Hardware, 1 case Lawn Sprinklers, 5 cases Wire Cloth, 160 boxes Axes, 1 case Hardware
By Hartley & Graham.—10 cases Cartridges, 2 cases Empty Shells, 50 cases Cartridges, 1 case Empty Shells, 1 case Primers, 1 case Rods, &c.
By H. W. Peabody & Co.—5 cases Bolts, 12 packages Hardware, 2 cases Oil Stoves, 2 cases Carpet Sweepers, 5 packages Hardware, 10 cases Horse Nails, 5 cases Hardware, 2 boxes Nails, 6 packages Hardware, 4 cases Nails, 4 cases Hardware, 1 package Hardware, 300 reels Barb Wire.
By F. B. Wheeler Company.—4 cases Wringers, 1 case Lampware, 12 cases Wringers, 110 cases Handles, 1 case Tinware, 1 case Hardware, 6 cases Wagon Jacks, 1 case Hardware.
By R. W. Cameron & Co.—1 box Hardware, 2 cases Sandpaper, 8 cases Hardware, 1 case Pulleys, 1 case Belting, 4 crates Pulleys.

PER BARK HERCULES, MARCH 31, 1892, FOR BRISBANE, QUEENSLAND.

By R. W. Forbes & Son.—1 box Emery Wheels, 1 case Rakes.
By L. D. Crossmond & Co.—1 case Hoes.
By F. & J. Meyer.—1 case Tinware.
By Winchester Repeating Arms Company.—3 cases Guns, 5 cases Cartridges, 1 case Cartridge Shells.
By Arkell & Douglas.—100 cases Axes, 2 crates Broilers, 400 reels Barb Ware, 5 packages Churns, 3 cases Hatchets, 1 case Fire Arms, 11 packages Hardware, 2 cases Guns, 6 cases Cartridges.
By Mailler & Quereau.—520 reels Barb Wire.
By H. W. Peabody & Co.—24 cases Sifters, 46 packages Hardware, 2 cases Iron Bolts, 22 packages Hardware, 1 case Rat Traps, 5 cases Handles.
By S. Hoffnung & Co.—1 case Rifles, 1 case Picks, 3 cases Tacks, 1 case Lanterns, 3 packages Lampware.
By Winchester Repeating Arms Company.—10 cases Cartridges.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

Reports on business in Paints and Colors have not been as uniformly favorable as were those of the preceding week, yet jobbers express satisfaction with the outturn of goods and manufacturers have little or nothing to complain of, except that some specialties are momentarily a little slow. Upon the whole the consumption of house-painting materials appears to be quite as large as customary at this season of the year and specialties are faring relatively as well. In values there have been no important changes, nor has anything new in the way of special conditions indicative of radical movement in the near future come to the surface. The general outlook, as a matter of fact, is encouraging to the maintenance of steady prices in all departments.

White Lead.—There has been a fairly active business in pure White Lead, including some purchases of round lots for future delivery in addition to the ordinary parcels taken by retailers and painters. The distribution, to all accounts, was quite as full the past week as during the preceding one. The better class of mixed Leads seem also to have fully held their own and the cheaper kinds used for other purposes than house painting are meeting with about the usual sale. Prices remain as quoted for some time and concessions are the exception where the pigment alone is taken, although still made occasionally by jobbers when attractive orders involving other goods are at stake.

Red Lead.—Of ordinary parcels needed to meet current wants there is still a very good movement, but comparatively few orders for large quantities come upon the market. Prices remain steady for both domestic and imported stock.

Litharge.—The demand from glass-makers continues slow, and the inferior class of product used in that work barely holds its own. For the high-grade article, however, the movement continues steady and old prices are maintained.

Orange Mineral.—Both foreign and domestic remain steady at the old range of prices, and a very good movement is taking place, without, however, individual dealings of other than ordinary volume.

Zincs.—American manufacturers still report heavy deliveries in execution of back orders and a seasonably good run of new business, between which current production is kept closely under control. The old line of prices for the several grades is closely adhered to. In foreign brands the movement is of routine character, and agents' prices are without change.

Colors, &c.—Very fair sales of some lines of grinders' Colors, for shipment by water later on, have been made, but otherwise little is noted beyond a fair average movement in ordinary parcels, covering the regular line of Dry and Oil Colors. Prices show but slight variation, and the general market preserves a steady tone. In ready mixed Paints the movement is somewhat uneven, but, upon the whole, of quite good volume.

Miscellaneous.—The market for Block Chalk is virtually at a standstill. Large consumers are well supplied, no sail shipments to this port are being made, and only moderate quantities come in by steamer. Whiting has met with fairly active sale, but orders are taken at the old prices. About the same is to be said of Paris White. Putty is without new feature. Southern Barytes have been sold at slightly lower prices, but foreign remain unchanged. Terra Alba, Talc and China Clay move at about former prices, but rather slowly.

Oils and Turpentine.

Business in Oils has proceeded in about the usual manner in the absence of conditions calculated to stimulate action on the part of jobbers or consumers, or to cause any pressure to realize on the part of sellers. In nearly all departments the experience has been a good steady market, with a hardening tendency to values in some lines and no movement of reverse character in any. Cotton-Seed products figure most conspicuously in point of firmness, but Linseed Oil is in nearly as good position, and Lard Oil holds up remarkably well in the face of a rather weaker tone to the market for raw material.

Linseed Oil.—While no heavier than usual at this season of the year, the movement into the channels of distribution and consumption is free in this market, and in other quarters the business passing proves to be large enough to act as a check upon competition. Hence, prices for both city and out of town brands remain very firm, with the tendency toward a higher range. The position of the markets for Oil Cake and Seed still favors an advance.

Cotton-Seed Oils.—The market has been very firm at the advance in prices established last week and rather more active. Exporters have manifested livelier interest, although not figuring prominently as buyers up to the present time; large home consumers have negotiated on round lots, and very fair sales have been made elsewhere. The dealings were chiefly in prime Summer Yellow, about 2000 barrels of which changed hands at 31½¢, and 100 barrels at 32¢. Several parcels of prime crude brought 28½¢, which price is now bid.

Lard Oil.—City pressers have made no change in their prices for prime Oil, although business is quieter and the cost of raw material somewhat lower. Receivers of out of town brands are also holding their prices very steadily and report very good sales during the week in this and other markets.

Fish Oils.—Additional sales of crude have been made at 68¢ in New Bedford, which price would indicate a very steady market, and a good average distribution of the manufactured products at steady prices is noted here. In Whale Oils nothing new has developed. Menhaden Oils rather quiet the past week, but very steady at old prices.

Miscellaneous —Ceylon Cocoanut Oil has met with better sale at 5¼¢ @ 5⅜¢ on spot and 5¢ @ 5⅛¢ to arrive. Olive Oil also selling better, but is without change in price. Tallow Oil unchanged and moving off slowly.

Spirits Turpentine.—The movement in prices has again been very narrow and the market bare of really new features here or in the South. Consumption is still of good volume, however, and the statistical position favorable, but prices in this market have fallen about 1¢ ₱ gallon.

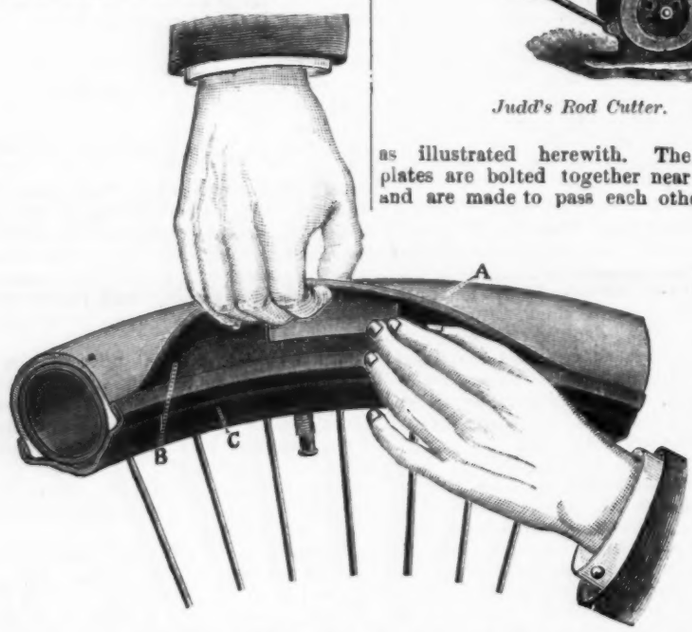
The Christy Paring Knife.

The Christy Knife Company, Fremont, Ohio, in addition to their bread and cake knives, are also putting on the market the paring knife represented full size herewith. The manufacturers mention that the ordinary paring knife which is ground on both sides has a tendency to cut very thick parings, while the contrary is true of the knife which they are offering. The blades are described as made of solid steel of the finest quality. Attention is called to the peculiar construction of the handle and the manner in which it is attached to the blade, and the point is made that the handle will not soak off or get loose, while it is very convenient for hanging up the knife.

The Christy Paring Knife.

The Warman & Hazlewood Clincher Pneumatic Tire.

Horton, Gilmore, McWilliams & Co., Chicago, are offering the Coventry Cross and Rival cycles made by Warman & Hazlewood, Limited, Coventry, England. The clincher pneumatic tire with which some of these wheels are equipped is represented in the accompanying illustration. This tire is so constructed that should it become punctured it can be easily repaired without much trouble or dirt. It is pointed out that in doing this no solution or tire cement is necessary, the tire being held in place by the expansion of the air tube, when filled with air, compressing the outer and protecting rubber A tightly in the rim B. When the wheel is deflated the whole of the arrangement covered by the patent is easily detachable; hence should an accident occur which punctures the tube the air tube is deflated as follows: Unscrew the cap from the valve fitted in small projecting tube C, then insert a long pin or piece of wire, such as a hairpin; this done carefully will open the valve without injury and permit the escape of air. Then remove the outer covering A at the part where punctured, and having provided a piece of sheet rubber about $\frac{1}{16}$ inch thick, cut with a sharp knife or pair of scissors a piece sufficiently large to cover the hole, and apply a little pure rubber solution to one side, and place over the puncture in the form of a plaster; replace the covering A and inflate, and the machine is ready to ride after a few moments are granted for the solution to dry. It is claimed for this wheel that should a puncture occur, and materials not be handy for its repair, that the rider can still ride the wheel so as to reach a point where the repairs can be effected. Horton, Gilmore, McWilliams & Co. are carrying, we are advised, a heavy stock of these wheels, as well as cushion tires and ladies' machines.



The Warman & Hazlewood Clincher Pneumatic Tire.

Judd's Rod Cutter.

H. L. Judd & Co., 87 and 89 Chambers street, New York, are offering this article, as illustrated herewith. The cutting plates are bolted together near the base, and are made to pass each other by the cogs on the lever engaging in the cogs of the movable plate. The rods are introduced through the holes near the base, the desired length being secured by the adjustable gauge on the gauge rod. It cuts all sized rods up to $\frac{5}{8}$ inch, inclusive, cutting with a perfectly clean edge and leaving no burr. It is simple in construction, and the point is made that it is almost impossible to get it out of order. The cutting plates can be removed should this become necessary.

Judd's Rod Cutter.

New Tire Upsetter.

The accompanying cut represents a new Tire Upsetter manufactured by Butts & Ordway, 500 Atlantic avenue, Boston. The machine is described as thoroughly constructed of best materials, and is easy of operation and adjustment. The size shown will upset 3 x $\frac{1}{4}$ inches, and larger sizes are in preparation. The method of operating this machine is simple. One downward motion of the lever throws the shoe cam on the tire and upsets the tire $\frac{1}{4}$ inch. The raising of the lever half way and making another downward motion upsets the tire another $\frac{1}{4}$ inch, which operation may be repeated as often as necessary. The back notch on the lever is intended for use on heavy tires and will, it is stated, do the work as easily as on light tires.

New Tire Upsetter.

The concession for the building of an interoceanic railway across Honduras, originally granted to an English syndicate, has been transferred to American parties headed by W. S. Valentine of New York, the Honduras World's Fair Commissioner, who expects that the completion of the work will greatly improve the commercial prospects of that country and extend the market for American goods. The entire length of the route is 225 miles and 57 miles of road have been built to the present.

Chisel Set No. 71.

C. E. Jennings & Co., 79 Reade and 97 Chambers street, New York, are offering a chisel set, as illustrated herewith. The box is 10½ x 16½ inches, substantially made and well finished, and contains one chisel each ⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾ and 2 inch. Each chisel in held in place by a nickel plated spring-wire fastener at the handle, while the cutting edge runs under a wooden cleat at the end of the box In this manner the chisels are held firmly in place, always ready for use. The chisels are made from the best tool steel, are ground sharp and fully warranted by the manufacturers. The handles used in these goods are durable and finely finished, and are made with patent improved leather tips, fastened in place with dowel pins.

Chisel Set No. 71.

Vermorel Nozzle and Bamboo Extension.

The Goulds Mfg. Company, Seneca Falls, N. Y., and 16 Murray St., New York, are offering the above articles, as illustrated herewith. The Vermorel nozzle as seen in Fig. 1 is arranged with a stuffing box, so that the liquid will not wet the operator while being used. It is also provided with a degorger, this being a plunger with a needle point, which may be pushed forward into opening of the spray cap to clean out any obstruction lodged there. The spiral spring holds it out of the way of the spray when not pushed forward. The nozzle with the lance, Fig. 2, is a spraying attachment 18 inches long, and is provided with a degorger. In this case the degorger is operated by means of a lever, otherwise the construction is the same as in Fig. 1. With the nozzles as shown in either Figs. 1 or 2 two caps are furnished with each nozzle, with different size spray openings. The nozzle as shown in Fig. 2 is fitted for ¾-inch hose. The bamboo extension used in connection with the nozzles, Fig. 3, is designed to extend the nozzles so as to reach the tops of the trees, thus directing the spray among the higher branches by the operator, while on the ground. It is 6 feet long, arranged with ¼ inch pipe inside the same, with hose attachment and brass stop cock at one end, the other end being arranged for ¼-inch iron pipe.

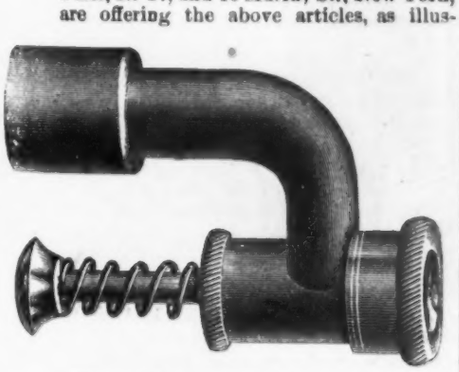


Fig. 1.—Vermorel Nozzle with Degorger.

Fig. 2.—Vermorel Nozzle with Lance.

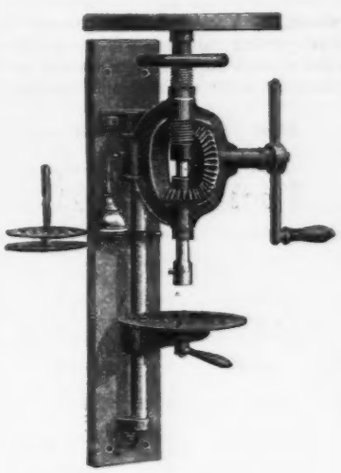
Fig. 3.—Bamboo Extension.

Bars, Lock Plates and Escutcheons.

—In England, perhaps, the oldest existing works in iron are hinges to doors, strengthening bars, handles, escutcheons, lock plates and the like. Even the nails were things of beauty. Abroad, the massive doors of the Cathedral of Nôtre Dame de Paris offer a wonderful example of early ironwork. Probably designed in the twelfth century, the doors are nearly concealed with their decoration of trees and birds, dragons and other grotesque beings. The door in St. George's Chapel, Windsor, is of about the same date. The grotesque knocker on the sanctuary door of Durham Cathedral, which bears a rather distant resemblance to a lion, is said to be of the twelfth century. The hollows for the eyes may have been formerly filled with crystal or enamel, or, as it has been suggested, the open eyes may have been contrived to emit light from within the church, so as to guide the hapless being seeking sanctuary by night to the welcome haven of safety.—*Chambers' Journal.*

Edwards' New Post Drill Press.

This contrivance is manufactured by M. L. Edwards Company, Salem, Ohio, and is illustrated herewith. It will be observed that it is equipped with a rack for drills, there being also a place for oil can. The manufacturers allude to the convenience of these features, especially in the case of the oil can. It is stated that the drill spindle makes two revolutions to one of the crank, drills to center of 14 inches and takes ½ inch round shank drill. The press is described as having an adjustable crank, round as well as slotted swinging table, with capacity equal to any. The company also state that the feed screw has anti-friction bearing on spindle that will not chafe. The weight of the press is about 100 pounds. The company also make a light three-spindle gang drill for power use.



Edwards' New Post Drill Press.

More than 15,000,000 bushels of wheat are in the warehouses at Duluth, also 200,000 barrels of flour, waiting shipment East. To move this accumulation will require over 300 vessels.

Dey's Time Register and Recorder.

Dey Patents Company, Syracuse, N. Y., for whom R. Perrin, 224 West Fourth street, New York, is agent, are offering a time checker, as illustrated in Fig. 1. The

Fig. 1.—Dey's Time Register and Recorder.

workman in passing the recorder moves the pointers to the figures comprising his number, say 152, and then presses down the projecting handle, which prints the record upon a paper slip, as shown in Fig. 2; thus 9.8 152* shows that number 152

Hour.	Coming in	Going out
9-8	152	152*
9-13	 60	60*
9-13	 65	65*
10	 24	24*
10	 30	30*
10-15	 34	34*
10-30	 15	15*
11	160	160*
11-50	209	209*
12	100	100*

Fig. 2.—Appearance of check slip.

left at 9.8 o'clock. The time of leaving work is designated by the star after the workman's number. It is stated that the clock is an ordinary eight-day clock, but of the best quality, and requires no more than ordinary attention. The point is made that the printed record is entirely beyond the workman's control, so that a mistake cannot be made, as the time will correspond exactly with the face of the clock. The printed slip may be removed daily or weekly for writing up the employees' time. The recorder is designed for use in factories, workshops, stores, offices, banks, &c.

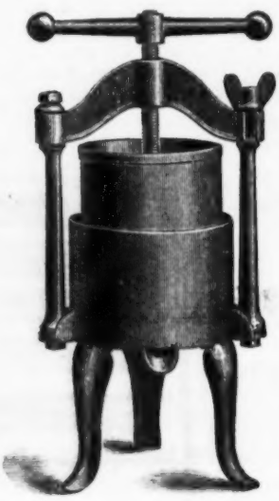
The Phillips Spraying Pump.

Field Force Pump Company, Lockport, N. Y., are manufacturing this pump, an illustration of which appears herewith. The special feature of this outfit is the ingenious contrivance for stirring the liquid. The bevel cog gear on the lever operates a companion gear which is attached, it will be observed, at the upper end to the steel shaft. The latter passes through the barrel parallel with the cylinder and suction pipe. At the lower end of the shaft is attached a horizontal wooden bar, so that at each stroke of the lever, it is stated, this bar is turned in a semicircle rapidly enough to keep the liquid and poison constantly mixed. The manufacturers call attention to the fact that every agricultural insecticide now in common use contains either copper salts or arsenic preparations, and these being so much heavier than water cannot be held in suspension except by constant stirring. While many devices have been introduced for the purpose of stirring the poisonous liquid, the company refer to the simplicity and practical construction of their contrivance, the low price of which is also alluded to. The company own the patent on this pump, which will be manufactured in connection with their line of well pumps, house force pumps and spraying pumps. The pump represented is furnished equipped with 10 feet of discharge hose and a combination Vermorel nozzle, also suction pipe and strainer, ready to mount on barrel.

The Phillips Spraying Pump.

Edwards' Improved Lard and Tallow Press.

M. L. Edwards Company, Salem, Ohio, are putting on the market the article represented in the accompanying illustration. This press is referred to as not only adapted to the use of butchers and others for making lard and tallow, but is especially useful to farmers, hotels, public institutions, druggists and private families for pressing all kinds of fruit, tinctures or anything from which the juice or grease is to be extracted. It will be observed that one end of the arch is slotted to receive a bolt

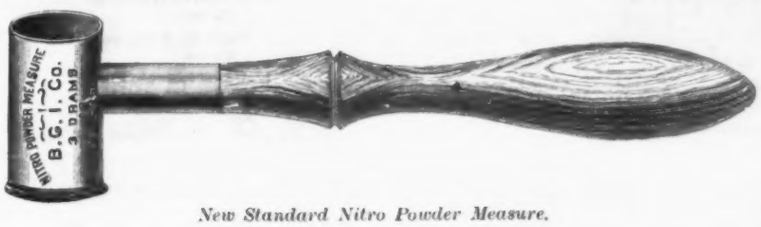


Edwards' Improved Lard and Tallow Press.

passing through the column. The opposite end is swiveled on top of the column, so that the plunger, when raised, can be turned entirely out of the way while filling the cylinder. The arch is securely held in place by the thumb nut shown at the right-hand side. The press is made in quart, ½, 1, 2, 3, 5, 8 and 13 gallon sizes. The inner barrel or strainer in quart, ½, 1 and 2 gallon sizes is made of heavy tin, the larger sizes of galvanized iron. The manufacturers mention that there are no cast threads, the screws and nuts being cut in a lathe, which leaves the threads, it is claimed, perfect and the fiber of the iron uninjured.

New Standard Nitro Powder Measure.

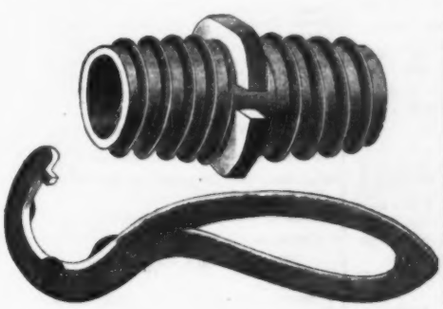
The Bridgeport Gun Implement Company, Bridgeport, Conn., and 313 and 315 Broadway, New York, have recently added to their line of specialties the measure represented herewith. These measures are intended for Schultze powder, and have, it is stated, been tested by the manufacturers of this powder and are guaranteed to be absolutely correct. They are packed in sets, each set containing three assorted powder measures and one shot measure, graduated 1 to 1½ ounces.



New Standard Nitro Powder Measure.

Robinson's Improved Hose Mender and Wrench.

Cleveland Foundry Company, Cleveland, Ohio, are manufacturing the above device, which is represented in the accompanying illustration. The menders are described as made in such a manner that a hose band is not necessary, the threads, it is stated, holding the hose perfectly secure. With the wrench shown they are quickly applied. These goods are packed six menders and one wrench in a pasteboard box, one gross (24 boxes) in a case. The device was patented December 1, 1891.



Robinson's Improved Hose Mender and Wrench.

At the annual meeting of the McDaniel & Harvey Company, held in Philadelphia on Tuesday, 19th inst., a complete reorganization was effected. Henry Whiteley was elected president of the company in the place of Joseph L. McDaniel. Huxley Harvey succeeds to Mr. Whiteley's former place as treasurer. Enoch McCullough was elected vice-president and John W. McCullough secretary. The McDaniel & Harvey Company are sole factors for the McCullough Iron Company, manufacturers of galvanized sheet iron and Harvey's patent cleaned sheet iron. The New York office is retained at 284 Pearl street, under charge of C. E. Mackintosh, sales agent.

Anderson Tin Plates.

The Anderson Tin Plate Company of Anderson, Ind., now have their plant in thorough working order, and are placing upon the market tin plates at the rate of about 400 boxes bright and 400 boxes terne plates per week. About half of this product is being shipped to the Chicago office and salesroom, 23 Lake street, which is in charge of C. A. Rosecrans. A carload received a few days ago at the Chicago office was inspected by experienced judges of tin plate and pronounced of excellent quality and superb finish. They claim that they have special features in their process which produce this finish, and use exclusively pure palm oil and the best refined tin in their coating. They say they use no flux and their entire product is hand work. C. B. Orvis, the general manager, states that they have been using both imported and American made sheets, and find that they can obtain better results with the American sheets. Their product will be branded and marketed as the Anderson Bright, the Anderson Roofing Tin and the Anderson Roofing Tin Old Style, and manufactured in all the prevailing sizes. The works have been in operation about three months, but up to the present time their entire output was consumed in the local market. They announce that from May 1 they will carry a large stock at their Chicago salesroom and be prepared to supply the general trade to the limit of their capacity. The main building is 50 x 100 feet, a portion of it two stories, with smaller additions to meet the requirements of the work. They have two stacks, one devoted to each class of plates, and have a great deal of specially devised appliances and machinery for facilitating the handling of their product. The company are incorporated under the laws of the State of Indiana under the name of the Anderson Tin Plate Company, for the manufacture of American tin and terne plates. Office and works are at Anderson, Ind. The officers are: Dixon C. Williams, president; C. B. Orvis, vice-president and general manager, and Francis A. Walker, secretary and treasurer.

During the past week 16,240 immigrants have been landed at Ellis Island, New York. This is the largest number in any one week this year. The number of immigrants arrived in the United States for the month ended March 31 was 53,879; same in 1891, 52,172; for three months ended March 31, 98,004; same in 1891, 86,048; nine months ended March 31, 362,363; same in 1891, 316,237.

The receipts of quicksilver at San Francisco for January, February and March were 4940 flasks, of which 2100 were shipped to New York.

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CURRENT HARDWARE PRICES.

APRIL 27, 1892.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers, at the figures named.

Adjusters, Blind.
Domestic ..... ₱ doz $3.00, 33⅓%
Excelsior ..... ₱ doz $10.00 ..... 50&10&2%
North's ..... list net @10%
Zimmerman's—See Fasteners Blind.

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils.—
Eagle Anvils, ₱ ℔ 10¢ ..... 15@15&5%
Peter Wright's ..... 11@11½¢
Armitage's Mouse Hole ..... 10½@11¢
Am. Wrought Horse shoe b and ..... 11@11½¢
Trenton ..... 10@10½¢
Wilkinson's ..... 10½@11¢
Moore & Barnes Mfg. Co 33⅓%

Anvil Vise and Drill—
Millers Falls Co., $18.00 ..... 30%
Cheney Anvil and Vise 25%
Allen Anvil and Vise, $3.00 ..... 40&10%
Star ..... 45&5%

Apple Parers—See Parers, Apple, &c

Augers and Bits—
Douglass Mfg. Co. } 70&10&10
Wm. A. Ives & Co. } &10&5%
Humphreysville Mfg. Co. }
French, Swift & Co. (F. H. Beecher, F. S. & W. Co 60%
Rockford Bit Company 30%
Cook's, Douglass Mfg. Co 55%
Cook's, N. H. Copper Co. 50&10@50&10&5%
Ives' Circular Lip 60%
Patent Solid Head 30%
C. E. Jenning & Co., No. 10, extension lip 40%
C. E. Jennings & Co., No. 30 ..... 60%
C. E. Jennings & Co., Auger Bits, ₱ set, 32½ quarters, No. 5, $5; No. 30, $3.50 30%
Lewis' Patent Single Twist 45%
Russell Jennings' Augers and Bits 25&10%
Imitation Jennings' Bits ..... 60@60&10%
Pugh's Block 30%
Pugh's Jenning's Pattern ..... 4 %
Car Bits ..... 60@60&10%
Car Bits, P. S. & W. Co ..... 60&10%
Snell's Car Bits 60%
L'Hommedieu Car Bits ..... 15&10%
Forstner Pat. Auger Bits 30%
Cincinnati Bell-Ringers' Bits ..... 30&10%

Bit Stock Drills—
Morse Twist Drills ..... 50&10&5%
Standard ..... 50&10&5%
Cleveland ..... 50&10&5%
Syracuse, for metal ..... 50&10%
Syracuse, for wood (wood list) .30@30&5%
Cincinnati, for wood ..... 30&10%
Cincinnati, for metal ..... 45&10%

Expansive Bits—
Clarks' small, $18; large, $26 ..35@35&10%
Ives' No. 4, ₱ doz $60 ..... 40%
Swan's 40%
Steer's, No. 1, $26; No. 2, $22 ..... 35%
Stearns' No. 2, $48 ..... 30%

Gimlet Bits—
Common ..... ₱ gross $2.75@$3.25
Diamond ..... ₱ doz $1.25 ..... 4 &10%
Bee ..... 35@35&5%
Double Cut, Shepardson's ..... 45@45&10%
Double Cut, Ct. Valley Mfg. Co ..30&10%
Double Cut, Bartwell's, ₱ gro $5.25
Double Cut, Douglass' ..... 40&10%
Double Cut, Ives' ..... 60@60&10%

Hollow Augers—
Ives } 33⅓@
French, Swift & Co. } 33⅓&10%
Douglass' }
Bonney's Adjustable, ₱ doz $48 ..40&10%
Stearns' ..... 20&10%
Ives' Expansive, each $4.50 ..... 50&5%
Universal Expansive, each $4.50 ..... 20%
Wood's ..... 15@25&10%
Cincinnati Adjustable ..... 25&10%
Cincinnati Standard ..... 25&10%

Ship Augers and Bits—
L'Hommedieu's ..... 15&10@15&10&5%
Watrous' ..... 15&10@15&10&10%
Snell's ..... 15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10@5%

Awl Hafts—See Hafts, Awl.

Awls—
Awls, Sewing, Common ₱ gr. 85@90¢
Awls, Should. Peg ..... ₱ gr. $1.50@$1.55
Awls, Pat. Peg ..... ₱ gr. 35¢@ 50
Awls, Shouldered Brad .. ₱ gr $1.30@1 40
Awls, Handled Brad ... ₱ gr. $2.50@$3.00
Awls, Handled Scratch ₱ gr $4.00@4 50
Awls, Socket Scratch .. ₱ doz. $1.10@1 20

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

	Plain.	Beveled.
First quality, best brands	$7.00 @	$7.50
First qual., other brands	6.62½ @ 6.75	
Second quality	6.00	6.50

Axle Grease—See Grease, Axle.

Axles—
No. 1 .. 3½@3½¢, No. 2, 3½@3¾¢
Nos. 7 to 14 ..... 6 &10%
Nos. 15 to 18 ..... 47½% } 3% cash
Nos. 19 to 22 ..... 70% }
Concord Axles, loose collar ..... 5½@6¢
Concord Axles, solid collar ..... 5½@6¢
National Tubular Self-Oiling ..... 33⅓@33⅓&5%

Bag Holders.—See Holders, Bag.

Balances—
Spring Balances 40%

	No. 2000	20	30
Chatillon, ₱ dos	$0.80	0.95	1.75 net

Chatillon Straight Balances 40%
Chatillon Circular Balances ..... 50&10%

Barb Wire.—See Wire, Barb.

Bars.
Crow—
Cast Steel ..... ₱ ℔ 3½¢
Iron, Steel Points ..... ₱ ℔ 2¢

Basins, Wash—
Standard Fiberware, No. 1, 10½-inch, $2; 12-inch, $2.25; 13½-inch, $2.75; 15-inch, $3.25.

Beams, Scale—
Scale Beams, List Jan. 12, '92 ..50&10@ 50&10&5%
Chatillon's No. 1 ..... 40%
Chatillon's No. 2 ..... 50%
Custer's 33⅓%

Beaters—
Egg—
Dover ..... ₱ doz $1.50
Duplex (Standard Co.) ..... ₱ doz $1.25
Rival (Standard Co.) ..... ₱ doz $1.00
Duplex Extra Heavy (Standard Co.) .. ₱ doz $3.50
Bryant's ..... ₱ gro $14.00
Double (H. & R. Mfg. Co.), ₱ gro. No. 0, $12.00; No. 1, $15.00; No. 2 ..... $36.00
Easy (H. & R. Mfg. Co.) ..... ₱ gro $12.00
Triple (H. & R. Mfg. Co.) ..... ₱ gro $16.50
Spiral ..... ₱ gro $4.25 @ 4.50
Improved Acme (H. & R. Mfg. Co.) .. ₱ gro $9 00
Paine, Diehl & Co.'s ..... ₱ gro $24.00
Silver & Co ..... ₱ doz $6.50
Culinary—
Keystone, P. D. & C., Each, No. 1, $1; No. 2, $2 ..... 20%

Bells—
Cow—
Common Wrought ..... 60&10%
Western, Sargent's list ..... 70&10%
Kentucky, "Star" ..... 30&10%
Kentucky, Sargent's list ..... 70&10%
Kentucky Durham ..... 70&10%
Dodge, Genuine Kentucky ..70@70&10%
Texas Star ..... 50&10@50&10&5%
Door—
Gong, Abbe's ..... 33⅓&10%
Gong, Yankee ..... 45&10%
Gong, Barton's ..... 40&10@50%
Crank, Taylor's ..... 25&10%
Crank Brooks' ..... 50&10&2%
Crank Cone's 10%
Crank, Connel's ..... 20&10%
Lever, Sargent's ..... 60&10%
Lever, Taylor's Bronzed or Plated .. net
Lever, Taylor's Japanned ..... 25&10%
Lever, R. E. M. Co.'s ..... 50&10&2%
Pull, Brook's ..... 50&10&2%
Electric,
Wollensak's 20%
Bigelow & Dowse 20%
Taylor's 20%
Hand—
Light Brass ..... 70&10¢
Extra Heavy 70%
White 70%
Silver Chime ..... 33⅓&10%
Globe Cone's Patent) ..... 25&10&35%
Miscellaneous—
Call ..... 40@40&5%
Farm Bells ..... ₱ ℔ 3¢@3½¢
Steel Alloy Church and School Bells .. 40%

Bellows—
Blacksmiths' ..... 60&10@60&10&5%
Molders' ..... 40&10@5%
Hand Bellows ..... 40&10@50%

Belting, Rubber—
Common Standard ..... 70@1'0&5%
Standard ..... 70-5@70&10%
Extra ..... 6'&10@60&10&5%
N.Y.B.&P.Co., Carbon 60%
N.Y.B.&P.Co., Diamond 50%
N.Y B.&P.Co., Para 40%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire.
Stoddard's Lightning Tire Upsetters .. 15%
Detroit Perfected Tire Bender 15%

Bits—
Auger, Gimlet, Bit Stock Drills, &c., see Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—
Cleveland Block Co., Mal. Iron 50@50&10%
Moore's Novelty, Mal. Iron 50%
Sure Grip Steel Tackle Blocks 25%

Boards, Stove.
Wood Lined Crystal 50%
Oxidized 45%
Embossed 50%
Paper Lined Zinc 55%
Crystal 50%
Embossed 55%
New Tacoma 55%

Belts—
Carriage, Machine, &c.—
Com. list June 10, '84 ..... 75&10&2%
Genuine Eagle, Norway, list Oct., '84 .. 80@80&10%
Phila. pattern, list Oct. 7, '84 ..75@75&10%
R.B.&W., old list 70%
Machine, list Jan. 1, 1890 ..... 80@80&5%
Bolt Ends, list Jan. 1, 1890 ..... 75&10@75&10&5%
Door and Shutter—
Cast Iron Barrel, Square, &c ..... 70&10%
Cast Iron Shutter Bolts ..... 70&10%
Cast Iron Chain (Sargent's list) ..65&10%
Ives' Patent Door Bolts 60&10@60&10&5%
Wrought Barrel ..... 70@70&10%
Wrought Square ..... 70@70&10%
Wr't Shutter, all Iron, Stanley's ..60&10%
Wr't Shutter, Brass Knob, " ..40&10%
Wr't Shutter, Sargent's list ..... 60&10%
Wr't Sunk Flush, Sargent's list ..... 55&10%
Wr't Sunk Flush, Stanley's list ..... 50&10%
Wr't B.K.Flush, Com'n " ..... 35&10%

Stove and Plow—
Stove 60%
Plow ..... 60&5%
R. B. & W., Plow 55%
Tire—
Common, list Feb. 28, '83 ..... 65%
Port Chester Bolt and Nut Company: Empire, list Feb 28, '83 ..... 65%
Keystone, Philadel., list Oct, '84 ..... 80%
Norway, Phila., list Oct. '84 ..... 75%
American Screw Company: Norway, Phil., list Oct. 16, '84 ..... 75%
Eagle, Phil., list Oct. 16, '84 ..... 80%
Philadel., list Oct. 16, '84 ..... 80%
Bay State, list Feb. 28, '83 ..... 65%
R.B.&W., Philadel., list Oct. 16, '84 ..... 80%

Borers, Tap.
Common and Ring ..... 20&10%
Ive's Tap Borers ..... 33⅓&5%
Enterprise Mfg. Co ..... 30&10@30%
Clark's ..... 33⅓@35%

Borax ..... ₱ ℔ 9½@10½¢

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Wagon.
Per ℔ ..... 2½¢

Braces.—
American Bit Brace Co.:
Nos. 10, 12, 20 ..... 60&10%
Nos. 11, 21, 24, 27 ..... 70&10%
Nos. 22, 23, 25 ..... 60&10&5%
Nos. 13, 26, 36, 37 ..... 70&10&5%
Ball Braces, net ..... $1.12 to $1.25
Amidon's
Barker's Imp'd Plain ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet ..... 75&10@80%
Eclipse Rachet 60%
Globe Jawed ..... 40@40&10%
Corner Brace ..... 40@40&10%
Universal, 8 in., $2.10; 10 in $2.25
Buffalo Ball ..... $1.10@$1.1
Barber's,
Nos. 10 to 16 ..... 60@ &10
Nos. 30 to 33 ..... @ &10%
Nos. 40 to 63 ..... 50&10@5 &1 &5%
Saxton's,
Barker's Imp. Polished ..... 75&10@80%
Barker's Imp. Nickeled ..... 65&10@70%
Ratchet, Polished ..... 50&10@60%
Ratchet, Nickeled ..... 40&10@50%
Buffalo Ball ..... net, $1.10@$1.15
Bartholomew's,
Nos. 25, 27 and 30 ..... 50&10@60&5%
Nos. 117, 118, 119 ..... 70@70&5%
Common Ball, American ..... $1.00@$1.10
Fray's Genuine Spofford's ..50&5@50&10%
Fray's No. 70 to 120, $1 to 123, 207 to 414 ..... 50&10%
Ives' New Haven Novelty ..... 70@70&5%
New Haven Ratchet ..... 60&5@60&10%
Barber Ratchet ..... 60&5@60&10%
Barbers ..... 60&5%
Spofford ..... 60&5@60&10%
Osgood's Ratchet ..... 40&10@50%
P. S. & W. Co., Peck's Patent 60%

Brackets—
Shelf plain,
Regular list ..... 65@70%
Sargent's list ..... 66⅔@66⅔&10%
Shelf, fancy,
Sargen 's list ..... 66⅔@66⅔&10%
Other makes at a wide range of prices.

Bright Wire Goods—See Wire.

Broilers—

Henis' Self-Basting.	Inch	9	10	9x11
	Per doz	$4.50	5.50	6.50

New Haven 50%
Wire Goods Co ..... 65&10%
Morgan Odorless ..... ₱ doz $12, 33⅓%

Buckets, Well.
Galvanized—
Hill's ..... ₱ doz, 12 qt, $4.25; 14 qt, $5.2
Iron Clad ..... ₱ doz. 14 qt, $4.25@$4.5
Helwig's Flat Iron Band $3.7
Helwig's Wired Top ..... ₱ doz $4.0

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers Butchers'.

Butts—
Brass—
Wrought Brass ..... 80@80&10%
Cast Brass, Tiebout's' 80%
Cast Brass, Fast ..... 33⅓&10%
Cast Brass, Loose Joint ..... 33⅓&10%
Cast Iron—
Fast Joint, Narrow ..... 50&10&5%
Fast Joint, Broad ..... 50&10@50%
Loose Joint } .70&10
Loose Joint, Japanned } @75%
Loose Joint, Jap. with Acorns } .70&10
Parliament Butts } @75%
Mayer's Hinges } .70&10
Loose Pin, Acorns } @75%
Loose Pin, Acorns, Japanned } .70&10
Loose Pin, Acorns, Japanned, Plated Tips } @75%
Wrought Steel—
Fast Joint, Narrow } .70&10
Fast Joint, Lt. Narrow } @75%
Fast Joint, Broad } .70&10
Loose Joint, Broad } @75%
Table Butts, Back Flaps, &c } .70&10
Inside Blind, Regular } @75%
Inside Blind, Light } .70&10
Loose Pin } @75%
Bronzed Wrought Butts 50%

Calipers—See Compasses.

Calks, Toe—
Gautier, One Prong, Blunt ..... 5½@6¢
Burke's, One Prong, Blunt ..... 5½@6¢
Burke's, Two Prong, Blunt ..... 7½@8¢
Burke's, One Prong, Sharp ..... 6½@7¢

Can Openers—See Openers Can

Caps—
Percussion, ₱ 1000—
Hicks & Goldmark's and Union Metallic Cartridge Co.
E. L. Waterproof, 1-10's ..... 35@37½
E. R. Trimmed Edge, 1-10's ..... 47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's .. 47@50¢
Musket Waterproof, 1-10's ..... 50@55¢
G. D ..... 27@30¢
A. B. Genuine Imported ..... 45¢
Eley's E. B ..... 55¢ @ 55¢
Eley's D Waterproof, Central Fire .. $1.80
Primers—
Berdan Primers, $1.00 ..... 2½
G. L. Caps (for Sturtevant Shells) $1.00 .. 2½
All other Primers, $1.30 ..... 3½

Cards—List January 23, 1891.
Watson's Cotton, Wool, Horse and File 25%

Carpet Stretchers—See Stretchers Carpet.

Carpet Sweepers—See Sweepers Carpet.

Cartridges—
Rim Fire Cartridges ..... 50&5&2½
Rim Fire Military ..... 15&2½
Cent. Fire, Pistol and Rifle ..... 35&5&2½
Cent. Fire, Military and Sporting ..... 15&5&2½
Blank Cartridges, except 22 and 32 cal., additional 10% on above discounts.
Blank Cartridges, 22 cal., $1.75 ..... 2½
Blank Cartridges, 32 cal., $2.50 ..... 2½
Primed Shells and Bullets ..... 15&5&2½
B. B. Caps, Round Ball, $1.75 ..... 2½
B. B. Caps, Con. Ball, Swgd., $2.00 ..... 2½

Casters—
Bed ..... } Brass ..... 55@55&10%
Plate ..... } Others ..... 60@60&10%
Shallow Socket ..... }
Deep Socket ..... 40&10%
Yale Casters, list May, 1884 ..30&10@40%
Yale, Gem ..... 60@60&5%
Martin's Patent (Phoenix) ..... 45&10@50%
Payson's Anti-friction 70%
Payson's Truck 70%
Giant Truck Casters 30%
Stationary Truck Casters ..... 50&10%
Socket Truck Casters 50%

Cattle Leaders—See Leaders, Cattle.

Cement.
Victor Elastic ..... 5 ℔ pails ₱ ℔ 5¢

Chain—
Trace, Wagon and Fancy Chains, List revised April 21, 1890 ..... 60@ 60&10%

American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.45	4.45	3.80	3.65	3.80	3.40	3.35

Less than cask lots, add ¼¢@½¢ ₱ ℔.
German Coil, list Oct 6, 1890 ..60@60&5%
German Halter Chain, list Oct 6, 1890 ..... 60@60&5%
Covert Halter ..... 60&2%
Covert Traces ..... 35@35%
Covert Heel Chain ..... 60&2%
Oneida Halter Chain ..... 60@60&5%
Galvanized Pump Chain ..... ₱ ℔ 5½@6¢
Jack Chain, Iron ..... 75&10@80%
Jack Chain, Brass ..... 75@75&10%

Chalk—
White, case lots, ₱ gr 50¢; small lots 55 @55¢
Red, case lots ... ₱ gr 67¢; small lots 77 @75¢
Blue, case lots ... ₱ gr 75¢; small lots 85¢ See also Crayons.

Chalk Lines—See Lines.

Chisels—
Socket Framing and Firmer.
P. S. & W } .75 @ 75&10%
New Haven } .75 @ 75&10%
Witherby } .75 @ 75&10%
Mix } .75 @ 75&10%
Ohio Tool Co ..... 75@75&5%
Douglass ..... 75@75&5%
Buck Bros 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 50@50&5%
Tanged and Miscellaneous.
Tanged Firmers ..... 40&10@50%
Butchers' ..... $4.75@$5.00
Spear & Jackson's ..... $5 to $
Buck Bros 30%
Cold Chisels, ₱ ℔ ..... 15&10%

Chucks—
Beach Pat ..... each, $3.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Bals Pat 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.,
Victor $3.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns.
Tilton Union, each, 5 gal. $3.25; 7 gal. $3.75; 10 gal. $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.50; 10 gal., $2.75 15 gal. 3.00 20 gal., 3 25

Clamps—

B. I. Tool Co.'s Wrought Iron.....35%
Adjustable, Cincinnati.....15&10%
Adjustable, Hammers.....15%
Adjustable, Stearn's.....30@30&10%
Stearn's Adjustable Cabinet and Corner.....30@30&10%
Cabinet, Sargent's.....60%&10%
Carriage Makers', Sargent's.....70&10%
Carriage Makers', P., S. & W. Co..40&10%
Eberhard Mfg. Co.....40&5@40&10%
Warner's.....40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....35&10%

Cleavers.

Butchers'.

Bradley's.....35@30%
L. & I. J. White.....40@40&5%
Beatty's.....40@40&5%
New Haven Edge Tool Co.'s.....40%
P., S. & W.....33⅓&5@33⅓&10%
Foster Bros.....30%
Schulte, Lohoff & Co.....40@40&5%

Clips—

Norway, Axle, ¼ & 5-16.....55&5&5%
2nd grade Norway Axle, ¼ & 5-16 65&5&5%
Superior Axle Clips.....60%&5&70%
Norway Spring Bar Clips, 5-16..50&5&5%
Wrought-Iron Felloe Clips.....₩ lb, 5½¢
Steel Felloe Clips.....₩ lb, 5¢
Baker Axle Clips.....25%

Cloth and Netting, Wire—See Wire, &c.

Cockeyes.....50%

Cocks, Brass.

Hardware list.....50&2%

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.

Hedford Fancy Goods Co.....40&10%
Embossed, Gilt, Pope & Steven's list 30&10%
Leather, Pope & Steven's list.....40%
Brass, Pope & Steven's list.....40%
Chapman Mfg. Company.....50&10@50%

Combs, Curry.

Fitch's.....50&10@50&10&10%
Rubber per doz $10.00.....20%
American Curry Comb Co.....Net prices

Compasses, Dividers, &c.—

Compasses, Calipers, Dividers.70@70&10%
Bemis & Call Co.'s
Dividers.....60&5%
Compasses & Calipers.....50&5%
Wing and Inside or Outside.....50&5%
Double.....60%
(Call's Pat. Inside).....30%
Excelsior.....50%
J. Stevens & Co.'s.....25&10%
Starrett's
Spring Calipers and Dividers.....25&10%
Lock Calipers and Dividers.....25%
Combination Dividers.....25%

Coopers' Tools—See Tools, Coopers'.

Cord—

Sash.

Common.....₩ lb, 10¢ @ 11¢
Patent, good quality.....₩ lb, 12 @ 12¢
White Cotton Braided, fair, ₩ lb, 24¢@25¢
Common Russia Sash.....₩ lb, 12½¢@13¢
Patent Russia Sash.....₩ lb, 14¢
Cable Laid Italian Sash.....₩ lb, 21@22¢
India Cable Laid Sash.....₩ lb, 12¢
Silver Lace—
A Quality, White, 50¢.....25 %
A Quality, Drab, 55¢.....25 %
B Quality, White, 20¢.....10 %
B Quality, Drab, 25¢.....10 %
Sylvan Spring Extra Braided White, 34¢
Sylvan Spring, Extra Braided, Drab, 39¢
Semper Idem Braided, White.....30¢
Egyptian, India Hemp, Braided.....26¢
Massachusetts, White.....26¢
Samson—
Braided, White Cotton, 50¢..30@30&5%
Braided, Drab Cotton, 55¢...30@30&5%
Braided, Italian Hemp, 55¢..30@30&5%
Braided, Linen, 80¢.....30@30&5%
Tate's Cotton Braided, White, ₩ lb, 28¢.10%

Wire Pictures.

Braided or Twisted.....70&10%

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See Knives, Corn.

Crackers, Nut—

Table (H. & B. Mfg. Co.).....40%
Blake's Pattern.....₩ doz $2.00, 10%
Turner & Seymour Mfg. Co.....50%

Cradles—

Grain.....50&5&2@50&10&2%

Crayons.

White Crayons, ₩ gross.....10¢
D. M. Stewart Mfg. Co., Metal Workers, ₩ gr. $2.50.....25%
D. M. Stewart Mfg. Co., Rolling Mill, ₩ gr. $2.50.....25%
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins Curtain.

Cutters—

Meat.

Dixon's ₩ doz.....40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$20.00

Woodruff's ₩ doz.....40&5%

Nos.	100	150
	$15.00	$18.00

Hales Pattern ₩ doz.....70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American.....30%

Nos.	1	2	3	4	5	6
Each	$6	$7	$10	$25	$50	$60

terprise.....30%

Nos.	10	12	22	23	42
Each	$3	$2.50	$4	$6	$16

at American Meat Cutter.....30%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$2.50	$4 00

Silles' Challenge ₩ doz.....45@45&10%

Nos.	1	2	3
	$32.00	$30.00	$40.00

Home No. ..... ₩ doz $26.00, 55&10%

Draw Cut, each:

Nos.	5	2	6	8
	$50	$75	$80	$225

.....20@25%

Beef Shavers (Enterprise).....20&10@30%
Little Giant (P. S. & W. Co.).....50%
Chadborn's Smoked Beef Cutter, ₩ doz $66.00

Tobacco.

Champion.....20&10@30%
All Iron.....₩ doz $4.25
Nashua Lock Co.'s..₩ doz, $13.00 50@55%
Wilson's.....55%
Sargents'.....₩ doz, $24, 55&10%
Acme.....₩ doz $20.00, 40%

Washer.

Smith's Pat.....₩ doz $12.00, 20&10&10%
Johnson's.....₩ doz $11.00, 33⅓%
Penny's, ₩ doz Pol. $14; Jap'd, $16.00, 55%
Appleton's.....₩ doz $16.00, 60&10%
Bonney's.....30&10%
Cincinnati.....35&10%

Dampers, &c—

Dampers, Buffalo.....40&10%
Buffalo Damper Clips.....40&10%
Crown Damper.....40%
Excelsior.....40&10%

Diggers, Post Hole, &c.—

Samson Post Hole Digger, ₩ doz $36.00, 25%
Fletcher Post Hole Augers, ₩ doz $36, 20%
Eureka Diggers.....₩ doz $12.50@14.00
Leed's.....₩ doz $8.00@9.00
Vaughan's Post Hole Auger, ₩ doz $13.00@14.00
Kohler's Little Giant.....₩ doz. $18.00
Kohler's Hercules.....₩ doz. $15.00
Kohler' New Champion.....₩ doz. $9.00
Schniedler.....₩ doz. $18.00
Ryan's Post Hole Diggers..₩ doz $24.00
Cronk's Post Bars, ₩ doz $60.00, 50&5@50&10%
Gibbs Post Hole Digger.....₩ doz $15 00
Imperial.....₩ doz $7.50
Shimer's Hollow Handle, ₩ doz, $24..50%

Dividers—

See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.

Money, ₩ doz.....$18&20

Drawing Knives—See Knives, Drawing.

Drills and Drill Stocks—

Blacksmiths'.....each $1.75
Blacksmiths' Self-Feeding, each $7.50,20%
Breast, P. S. & W.....40&10%
Breast, Wilson's.....30&5%
Breast, Millers Falls.....each $3.00, 35%
Breast, Bartholomew's.....each $2.50, 25&10@40%
Ratchet, Merrill's.....20@20&5%
Ratchet, Ingersoll's.....25%
Ratchet, Parker's.....30@20&5
Ratchet, Whitney's.....20&10%
Retchet, Weston's.....20@25%
Ratchet, Moore's Triple Action...30@30%
Ratchet, Curtis & Curtis.....30%
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....20&10%
Wilson's Drill Stocks.....10%
Automatic Boring Tools.....$1.75@$1.85

Twist Drills—

Cleveland.....50&10&5%
Diamond, W. & B.....50&10&5%
Graham's Pat. Groove Shank 50&10&5%
Morse.....50&10&5%
New Process.....50&10&5%
Standard.....50&10&5%
Syracuse (Metal list).....50&10%

Drill Bits or Bit Stock Drills—See Augers and Bits.

Drill Chucks.—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.

Douglas Mfg. Co.....20@20&10%
Disston's.....50%
Buck Bros.....30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles.....6"&10%
No. 86.....70&10%
Sargent & Co.'s
No. 1 Forged Blade.....60&10&10%
Nos. 20, 30 and 60.....60%&10&10%
P. S. & W.....70 %
Knapp & Cowles:
No. 1.....60&20@70%
No. 2.....60&10&10@70&5%
No. 3.....60&5@60&10%
Nos. 4 and 00, Acme and Ideal..50& 5&50&10&5%
Stearns'.....25&10&5%
Gay & Parsons.....35%
Champion.....25&10%
Clark's Pat.....30@33⅓%
Crawford's Adjustable.....30%
Ellrich's Socket and Ratchet..35@25&10%
Allard's Spiral, new list.....25%
Kolb's Common Sense ₩ doz $3.00,25&10%
Syracuse Screw-Driver Bits...30&30&5%
Screw-Driver Bits ₩ doz 50@75¢
Screw-Driver Bits, Parr's.....₩ gro $6.25
Fray's Hol. Hdle. Sets. No. 2. $12.00, 25@25&10%
P. D. & Co.'s all Steel.....50%
Cincinnati.....25&10%
Brace Screw Drivers.....25&10%
Buck Bros.' Screw-Driver Bits.....

Egg Beaters.—See Beaters, Egg.

Egg Poachers.—See Poachers, Egg.

Electric Bell Sets.—See Bells, Electric.

Emery.—No. 4 to No. 54 to Flour, CF

	46 gr.	150 gr.	F. FF.
Kegs, ₩ lb.....	4½¢	5 ¢	2½¢
½ kegs, ₩ lb...	4½¢	5½¢	2½¢
¼ kegs, ₩ lb...	5 ¢	5½¢	3 ¢
10-lb cans, 10 in case.....	6 ¢	6½¢	5 ¢
10-lb cans, less than 10.....	10	10 ¢	

Enameled and Tinned Ware—See Ware, Hollow.

Escutcheon Pins—See Pins, Escutcheon.

Escutcheons.

Door Lock....Same dis as Door Locks.
Brass Thread.....60@60&10%
Wood.....25%

Expanded Metal.

List No. 5.

Lathing.....10%
Fencing, Painted Sheets.....30%
Netting, Painted Sheets.....30%
Door Mats, Galvanized.....25%
Window Guards, Paneled.....15%
Tree Guards, Paneled.....15%

Extractors, Lemon Juice—See Squeezers, Lemon.

Fasteners, Blind—

Mackrell's, ₩ dos. $1.00.....20@20&10%
Van Sand's Screw Pat., $15 ₩ gr..60&10%
Van Sand's Old Pat., $15.00 ₩ gr..55&10%
Austin & Eddy No. 2008 ₩ gr.....$9.00
Security Gravity, ₩ gr.....$9.00
Zimmerman's.....45 %

Faucets,—

Fenn's.....40%
Bohren's Pat. Rubber Ball.....25%
Fenn's Cork Stops.....33⅓%
Star.....60%
Frary's Pat. Petroleum.....40&5&2%
B. & L. B. Co.
West's Lock, Open and Shut Key...50%
Star, Metal Plug, new list.....40%
Lockport, Metal Plug, reduced list..60%
Metallic Key, Leather Lined....60&10@ 60&10&10%
Cork Lined.....70&5@70&10%
Burnside's Red Cedar.....50%
Burnside's Red Cedar, bbl lots....50&10%
John Sommers'
Peerless Best Block Tin Key.....40%
IXL, 1st quality, Cork Lined.....50%
Diamond Lock.....40%
Perfection, Fla. Red Cedar.....50%
Goodenough Cedar.....50%
Boss Metallic Key.....50%
Reliable Cork Lined.....60%
Western Pattern Cork Lined.....50%
Self-Measuring
Enterprise, ₩ doz $36.00.....20&10%
Lane's, ₩ doz $36.00.....25&10%
Victor, ₩ dos $36.00.....25&10%

Felloe Plates—See Plates, Felloe.

Fifth Wheels.—

Derby and Cincinnati.....45&5%
Brewster.....50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c.....60&10@60&10&5%
Nicholson (X. F.) Files.....25%
Nicholson's Royal Files (Seconds).....75% (extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....50&10@50&10&5%
Arcade.....60&10@60&10&10%
Eagle.....60&10@60&10&10%
Other makers, best brands.....10@50&30%
Fair brands.....60&10&10@70&5%
Second quality.....70&10@75&10%
Heller's Horse Rasps.....50&7½@50&10%
McCaffrey's Horse Rasps.....50&10%
Chesson's Horse Rasps, Hand Cut...50&10%
Arcade Horse Rasps.....60&10%

Imported—

Butcher.....Butcher's list, 20%
Stubs.....Stubs list, 25@30%

Fixtures.

Grindstone—

Sargent's Patent.....70&10%
Reading Hardware Co.....30&10%
P., S. & W. Co.....50&10%

Fluting Machines—See Machines, Fluting.

Fluting Scissors—See Scissors, Fluting.

Fodder Squeezers—See Squeezers, Fodder.

Forks—

Hay, Manure, &c., Asso List..65&5@65&10%
Hay, Manure, &c., Phila. List. 60@60&5%
Plated, see Spoons.

Frames—

Saw—

White Vermont.....₩ gro $9.00@10.00
Red, Polished and Varnished.....₩ doz $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame. 33⅓&10%
Warner's Screen Corner Irons..33⅓@ 33⅓&10%
Stearns' Frames and Corners..25@25&10%
Cortland.....40@40&5%

Freezers, Ice Cream—

White Mountain.....60@60&5%
Granite State.....65@65&5%
Arctic.....70@70&5%
American.....60%
Buffalo Champion.....65@65&5%
Shepard's Lightning.....65@65&5%
Gem.....60%
Blizzard.....70%
Double Action Crown.....60%
Crown.....60%
Star.....60%
Peerless.....60&10%
Giant.....60%
Zero.....60&10&10%
Boss and Pet.....60&10&10&10%
Keystone, P. D. & Co., each $1.50.....20%

Fruit and Jelly Presses—See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Funnels.

Gersdorff's Perfection, Standard and Globe; Tin, 1 gro., 10 %; 2 to 5 gro., 20 %; 5 to 10 gro.....30 %
Copper, 1 to 6 doz., 15 %; 6 to 12 doz., 20 %; over 12 doz.....25 %

Furnaces, Soldering.

Burgess No. 3 Gem, tin reservoir....$7.00
Burgess No. Gem, copper reservoir, 8.50

Fuse—Dis. 12½%. ₩ 1000 ft
Common Hemp Fuse, for dry ground..$2.70
Common Cotton Fuse, for dry ground 2.25
Single Taped Fuse, for wet ground.. 3.25
Double Taped Fuse, for very wet gr.. 4.25
Triple Taped Fuse, for very wet gr.. 5.00
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water.12.00

Gates, Molasses—

Stebbin's Pattern.....30@30&5%
Stebbin's Genuine.....60&10&10%
Stebbin's Tinned Ends.....40&10%
Chase's Hard Metal.....50&10%
Bush's.....30%
Lincoln's Pattern.....70&70&10%
Weed's.....20&10%
Boss, ₩ dos:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10.....60&10&10%

Gauges.

Marking, Mortise, &c.....60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....20&10%
Wire, Wheeler, Madden & Co.....10%
Wire, Morse's.....25%
Wire, Brown & Sharpe's.....10@20%
Wire, P. S. & W. Co.....10&10

Gimlets—

Nail and Spike.....50&10&5%
"Eureka" Gimlets.....40&10%
"Diamond" Gimlets.....₩ gr $5.00
Double Cut, Shepardson's.....45@45&5%
Double Cut, Ives'.....50@50&5%
Double Cut, Douglass'.....40&10%

Glue—

Le Page's Liquid.....25@25&5%
Upton's Liquid.....35%
Improved Process.....25@25&5%
Dodd's Liquid Glue.....25@25&5%

Glue Pots—See Pots, Glue.

Grease, Axle.

Fraser's.....Keg ₩ lb 4¢, Pail ₩ lb 5¢
Fraser's, in boxes.....₩ gr $9.50
Dixon's Everlasting, in box...₩ doz 1 lb $1.50; 2 lb $2.00
Dixon's Everlasting....10-lb pails, ea. 35¢
Lower grades, special brands, ₩ gr $5.50@$7.00

Grindstones—

Small, at factory.....₩ ton $7.50@8.00
Family, regular list.....60%
Family, Cleveland Stone Co.....30 %

Grindstone Fixtures—See Fixtures Grindstone.

Hack Saws—See Saws.

Hafts, Awl.

Sewing, Brass Per. ₩ gr, $3.50.....45&10%
Pat. Sewing, Short, $1.00 ₩ doz.....40&10%
Pat. Sewing, Long.....₩ doz $1.20
Pat. Peg, Plain Top, ₩ gr $10.00...45&10%
Pat. Peg, Leather Top, ₩ gr $12.00.45&10%

Halters.

Covert's, Rope, Jute.....60&10&10&5%
Covert's, Rope, 7-16-in., Jute.....70&5%
Covert's, Rope, ½-in. Hemp.....50&5%
Covert's Adj. Rope Halters.....40&5%
Covert's Hemp Horse and Cattle Tie, 50&5%
Covert's Jute Horse Ties.....70&5%
Covert's Jute Cattle Ties.....70&10&5%
Covert's Adj. Web Halters.....35&5&5%
E. Covert Mfg. Co.'s Halters.....33⅓%
E. Covert Mfg. Co.'s Horse and Cattle Ties.....33⅓

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
} 50@50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail..40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Che ey's Claw.....40&10%
Cheney's Machinist's & Riveting Sets&5%
Hartford, Nail Hammers.....40&5%
Hartford, Machinists', &c...50&5@50&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles.....20@25
Peck, Stow & Wilcox.....40%
Sargent's.....33⅓&10%

Heavy Hammers and Sledges—

3 lb and under.....₩ 24@—
3 to 5 lb.....₩ 23@— } 70@70&10%
Over 5 lb.....₩ 30@—
Wilkinson's Smiths.....10½@11@11½

Handcuffs and Leg Irons—See Police Goods.

Handles—

Cross-Cut Saw Handles—

Atkins' No. 1 Loop, ₩ gr., 23¢; No. 3, 18¢; No. 6, 15¢; No. 2 and No. 4, Reversible, 18¢.
Champion.....18¢

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.10	1.35	1.50

60&10&5

Goggin's Latches.....₩ doz 30@33
Bronze Iron Drop Latches..₩ doz 70¢ net
Japan'd Store Door Handles—Nuts, $1.02; Plate, $1.10; no Plate, $0.88.....net
Barn Door, ₩ doz $1.40.....10&10%
Chest and Lifting.....70%

Wood—

Saw and Plane.....40&10@40&10&5
Hammer, Hatchet, Axe, &c....40@40&5%
Brad Awl.....₩ gr $3.00
Hickory Firmer Chisel, ass'd. ₩ gr 4.50
Hickory Firmer Chisel, large. ₩ gr 5.00
Apple Firmer Chisel, ass'd...₩ gr 5.00
Apple Firmer Chisel, large...₩ gr 6.00
Socket Firmer Chisel, ass'd..₩ gr 3.00
Socket Framing Chisel, ass'd. ₩ gr 5.00
} 60@60&10%
I. B. Smith & Co.'s Pat File.....50
File, assorted.....₩ gr 2 75
Auger, assorted.....₩ gr 5.00 } 50%
Auger, large.....₩ gr 7.00
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....₩ set $1.35
Pat. Auger, Swan's.....₩ set $1.00
Hoe, Rake, Shovel, &c.....50&10%

Hangers—

Barn Door, old patterns...60&10&10@70%
Barn Door, New England...60&10&10@70
Samson Steel Anti-Friction...55%
Orleans Steel...55%
Hamilton Wrought Wood Track...55%
U. S. Wood Track...65%
Champion...60&10%
Rider and Wooster, Medina Mfg. Co.'s list...70%
Climax Anti-Friction...55%
Climax Anti-Friction for Wood Track55%
Smith for Wood Track...55%
Reed's Steel Arm...50%
Challenge, Barn Door...50%
Sterling...50@50&10%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00...50&2%
Cheritree...50&10%
Kidder's...40&10@50%
Boss...60&10%
Best Anti-Friction...60&10%
Duplex (Wood Track)...60&10&5%
Terry's Pat., ₩ doz pr. 4 in, $10.00; 5 in. $12.00...50&10%
Terry's Steel Anti-Friction Leader 50&10%
Terry's Steel Anti-Friction Ideal..50&10%
Cronk's Patent, Steel Covered...50@5%
Wood Track Iron Clad, ₩ ft. 10¢...50 &15@60%
Carrier Steel Anti-Friction...50&10%
Architect, ₩ set $6.00...20%
Eclipse...20&10%
Felix, ₩ set $4.50...20%
Richards'...30@30&10%
Lane's Standard...50&5@50&10%
Lane's New Standard...50@50&5%
Lane's Parlor...40%
Ball Bearing Door Hanger..20&10@25&10%
Warner's Pat...20&10@20@10&10%
Stearns' Anti-Friction.20&10@20&10&10%
Stearns' Challenge...25&10@25&10&10%
Faultless...40@40&5%
American, ₩ set $6.00...30&10%
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢...40%
Paragon, Nos. 1, 2 and 3...40&10%
Cincinnati...25&10%
Paragon, Nos. 5, 5½, 7 and 8...20&10%
Crescent...60@60&10%
Nickel Cast Iron...50%
Nickel, Malleable Iron and Steel...40%
Scranton Anti-Friction Single Strap33⅓&5
Wild West, 4 in. Wheel, $15.00; 5 in. Wheel, $21.00...45%
Star...40&10@40&10&5%
May...50&5@50&10%
Barry, $6.00...40&10%
Interstate...50%
Magic...45%
Pendulum, Payson's...40%

Harness Snaps—See Snaps.

Hatchets—

American Axe and Tool Co.
Blood's
Hunt's
Hurd's
Mann's
Peck's
Underhill's
} 40 & 10

Buffalo Hammer Co. @
Fayette R. Plumb... 50&5 %
C. Hammond & Son...
Kelly's
Sargent & Co.
P., S. & W. Co.
Ten Eyck Edge Tool Co.

Collins...10%
Schulte, Lohoff & Co...50@50&5%

Hay and Straw Knives—See Knives.

Hinges—

Blind Hinges—

Parker...75&2%
Huffer...50%
Clark's, Nos. 1, 3, 5, 40 and 50 75&10&5@80%
Clark's Mortise Gravity...50%
Sargent's Nos. 1, 3, 5, 11, 13 75&10@55&10&5%
Sargent's, No. 12...77&10&10%
Reading's Gravity...75&10@75&10&5%
Shepard's
Noiseless...75&10%
Niagara...80%
Buffalo...80%
Clark's Genuine Pattern...80%
O. S., Lull & Porter...75&10%
Acme, Lull & Porter...75%
Queen City Reversible...70&10&5@75%
Clark's Lull & Porter, Nos. 0, 1, 1¾, 2, 2½, 3...75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50...10%

Gate Hinges—

Western...₩ doz $4.40, 60%
N. E...₩ doz $7.00, 55%
N. E. Reversible...₩ doz $5.20, 55&10%
Clark's, Nos. 1, 2, 3...60&10&2%
N. Y. State...₩ doz $5.00, 55&10%
Automatic...₩ doz $12.50, 50%
Shepard's...60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts...40%
Union Spring Hinge Co.'s list, March 1886...2 %
Barker's Double Acting...25%
Union Mfg. Co...25%
Bommer's...30%
Buckman's...15&20%
Chicago...30%
Bardsley's Patent...40%
Acme...30%
U. S...25&10%
Empire and Crown...20%
Hero and Monarch...55%
American, Gem, and Star...20%
Oxford...20%
Wiles'...10%
Devore's...40%
Rex...40%
Royal...60%
Reliable...60%
Champion...60%
Stearn's...50&10%
Samson, ₩ gross...$14.00

Extra 5@10 % often given.

Wrought Iron Hinges.

List February 14, 1891.
Strap and T...50&10%
Corrugated Strap & T...50@50&10%
Screw Hook and Strap { 6 to 12 in., ₩ D. 4¢ 14 to 20 in., ₩ D. 3½¢ 22 to 36 in., ₩ D. 3¢
Screw Hook and Eye... { ½ in., ₩ D 7½¢ ⅝ in., ₩ D 5½¢ ¾ in., ₩ D 4½¢
Rolled Blind Hinges, Nos. 33 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate...70&10%
Rolled Raised...70&10%
Plate Hinges "Providence" { 8, 10 & 12 in., ₩ D...5¢ over 12 in., ₩ D...4¢

Hoes—

Eye—

D. & H. Scovil...20%
Lane's Crescent Planters Pattern..45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat...45&5%
Sandusky Tool Co., S. & O. Pat. } 70@70&
Am. Axe and Tool Co., S. & O. Pat. } 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub...60&10%

Handled—

Garden, Mortar, &c...70%
Planter's, Cotton &c...70%
Warren Hoe...60%
Magic...₩ doz $4.00

Hog Rings and Ringers—See Rings and Ringers.

Hoisting Apparatus—See Machines, Hoisting.

Hollow-Ware—See Ware, Hollow.

Holders.

Bag.

Sprengle's Pat...₩ doz $18...60%

Bit.

Extension,
Barber's, ₩ doz $15.00...40@40&10%
Ives, ₩ doz $20.00...60&5@60&10%
Diagonal...₩ doz $24.00, 40%
Angular...₩ doz $24.00, 40&5%

File and Tool—

Bals Pat...₩ doz $4.00; 25%
Nicholson File Holders...20%
Dick's Tool Holder...20%

Hooks—

Cast Iron—

Bird Cage, Sargent's list...
Bird Cage, Reading...
Clothes Line, Sargent's list..
Clothes Line, Reading list. } 60&10&10%

60&10@60&10&10%
Ceiling Sargent's list...55&10&10%
Harness, Reading list...55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@60&10%
Coat and Hat, Reading.50&10@50&10&10%

Wrought Iron—

Cotton...₩ doz $1.25
Cotton Pat. (N.Y. Mallet & Handle W'ks). 30%
Tassel and Picture (T. & S. Mfg. Co.)...50%
Wrought Staples, Hooks, &c. See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886...60@60&10%
Wire Coat and Hat, Miles, list April, 1886...50&50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard.60@60&10%
Handy Hat and Coat...50&10@60%
Steady Ceiling Hooks...50&10@60%
Belt...80&80&10%
Atlas, Coat and Hat...60@60&10%
Bright Wire Goods, see *Wire*.

Miscellaneous.

Grass, No. 2, $2.00; No. 3, $2.25; No. 4, $2.50
Nolin's Grass...₩ doz $2.25
Bush...55@60%
Whiffletree—Patent...55%
Hooks and Eyes—Malleable Iron. 70@70&10%
Hooks and Eyes—Brass...60&10&10%
Fish Hooks, American...50%
Bench Hooks...See Bench Stops.

Horse Nails—See Nails, Horse.

Horse Shoes—See Shoes, Horse.

Hose, Rubber—

Competition...75@75&10&5%
Standard...60&10&10@70&10%
Extra...60@60&10%
N. Y. B. & P. Co., Para...25&5%
N. Y. B. & P. Co., Extra...40@40&5%
N. Y. B. & P. Co., Dundee...40&10 @ 60%

Huskers—

Blair's Adjustable...₩ gr $8.00
Blair's Adjustable Chipper...₩ gr 7.00
Hubbard's Solid Steel...₩ gr 4.50

Indurated Fiber-Ware—See Ware, Indurated Fiber.—

Irons.

Sad—

From 4 to 10, at factory...₩ 100 ℔, $2.30@$2.40
Self-Heating...₩ doz $9.00 net
Self-Heating, Tailors'...₩ doz $18.00 net
Mrs. Pott's Irons...60@60&10%
Enterprise Star Irons...60@60&10%
XX Cold Handle Sad Iron...50&5@60%
Ideal Irons new list.50&10@50 & 10&10%
Salamander, Irons...35%
B. B. Sad Irons, ₩ ℔...3 @3½¢
Combined Fluter and Sad Iron, ₩ doz. $15.00...15%
Fox Reversible, Self-Fluter ₩ doz $24.00
Chinese Laundry (N.E. Butt Co.) 8½¢, 15%
New England...8¢, 15%
Mahony's Troy Pol. Irons...25%
Sensible, list Jan. 91...50&10&5%
Sensible Tailor's Irons...33⅓&5
National Self-Heating...30 %

Soldering—

Soldering Coppers...₩ ℔ 19 @ 21¢
Covert's Adjustable, list Jan. 1 1886. 25&2%

Irons, Pinking, per doz., 65¢.

Jack Screws—See Screws.

Jacks, Wagon.

Daisy...33⅓&5
Victor...33⅓&5
Lockport...40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld. W.M. list Jan. 1, '91.20%
Enameled and Tea—See Hollow Ware.

Keys—

Lock Asso'n list Dec. 30, 1886...50&10@ 60&5%
Eagle, Cabinet, &c...33⅓&2%
Hotchkiss' Brass Blanks...40%
Hotchkiss, Copper and Tinned...40%
Hotchkiss' Pad. and Cab...25%
Satchel Bed Keys...₩ doz $4.00, 15%
Wollensak Tinned...50&10%

Knife Sharpeners—See Sharpeners, Knife.

Knives.

Butcher, Shoe, &c—

Wilson's Butcher Knives, List Dec. 8, 1890...25%
Ames' Butcher Knives...25%
Foster Bros.' Butcher, &c...40%
Jordan's AAA1, Butchers', list...net
Nichols' Butcher Knives...40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives...20&25%
Ames' Bread Knives, ₩ doz $1.50, 15&20%
Moran's Shoe and Bread...20%
Hay and Straw...See Hay Knives.
Table and Pocket...See Cutlery.
Corn, Auburn Mfg. Co. Western Pat., $3.00
Corn, Auburn Mfg. Co. Crescent...$3.50

Corn—

Bradley's...10%
Wadsworth's...25%

Drawing—

Witherby
P. S. & W
Mix
New Haven
} ..75@75&10%

Merrill...60&10@60&10&5%
Douglas...75@75&5%
Watrous...15&10@25%
L. & L. J. White...20&5%
Bradley's...35%
Adjustable Handle...25@33⅓&
Wilkinson's Folding...25@25&5%

Hay and Straw—

Lightning, from jobbers...$8.00 @ $9.00
Wadsworth's...40@7½@40&10%
Carter's Needle...₩ doz $11.00@$11.50
Heath's...₩ doz $13.00@13.50
Auburn Hay, Com. and Spear Point..50%
Auburn, Straw...40%
Nolin's Hay...₩ doz. $7.00 @ $8.00

Mincing.

Am. (3d quality), ₩ gr., 1 blade, $7; 2 blades, $13; 3 blades, $18...net
Lothrop's...20&10%
Smith's, ₩ doz, Single, $2.00; Double, $3 40@45%
Knapp & Cowles...50&10@60%
Buffalo Adjustable...₩ doz $3.00 25%
Buffalo Double Adj'table, ₩ doz $3.00 25%

Knobs—

Door Mineral...60@65%
Door Por. Jap'd...70@75%
Door Por. Nickel...$2.00@2.25
Door Por. Plated, Nickel...$2.00@2.25
Drawer, Porcelain...60&10@60&10&10%
Hemacite Door Knobs...40&10@50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture, Plain...75¢ gro inch, 10%
Furniture, Wood Screws...25&10%
Base, Rubber Tip...70&10&5%
Picture, Judd's...60&10&10@70%
Picture, Sargent's...70&10%
Picture, Hemacite...35&5%
Shutter, Porcelain...65&10%
Carriage, Jap...₩ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c..40%

Ladies.—

Melting, Sargent's...55&10%
Melting, Reading...35&10%
Melting, Monroe's Pat...₩ doz $4.00, 40%
Melting, P. S. & W...35&10@40%
Melting, Warner's...30%

Lanterns—

Tubular—

Plain with Guards, ₩ doz...$3.75@4.00
Lift Wire, with Guards...$4.00@4.25
Square Plain, with Guards...$3.75@4.00
Sq. Lift Wire, with Guards...$4.50

Police Lanterns (including packages).

2¼-inch Bull's-eye Police regular. ₩ doz $3.00
3-inch Bull's-eye Police regular. ₩ doz $3.50
2¼-inch Bull's-eye Police flash light. ₩ doz $4.00
3-inch Bull's-eye Police flash light. ₩ doz $4.50

Lawn Mowers—See Mowers, Lawn.

Leaders, Cattle.

Humason, Beckley & Co.'s...70%
Sargent's...60%&10%
Hotchkiss...30%
Peck, Stow & W. Co...60&10%

Lemon Squeezers—See Squeezers, Lemon.

Lifters, Transom.

Wollensak's:
Class 2 and 4, Bronzed Iron...50%
Class 3 and 4, Bronze Metal...25%
Class 3 and 4, Brass...35%
Skylight Lifters...25%
Crown, Eagle and Shield...50%
Reiher's, list Feb. 20, 1891.
Bronzed Iron Rods...50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior...60&10&2 %
Shaw's...50&10%
Payson's:
Universal...60%
Solid Grip...60&10%
Imperial...50&10%

Lines—

Cotton and Linen Fish, Draper's...50%
Draper's and Tate's Chalk...50%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25...25%
Cotton Chalk...55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; No. 5, $3.00...10%
Silver Lake, Braided, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₩ gro...25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50.
Mason's Colored Cotton...45%
Wire Clothes... Nos. 12 16 20
100 ft. $3.50 $3.00 $2.50
Ventilator Cord, Samson Braided. White or Drab Cotton..₩ doz $7.50, 20%

Links, Open.

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev Jan. 1, '85...33⅓&2%
Deits, Nos. 36 to 39...40%
Deits, Nos. 51 to 63...40&10%
Deits, Nos. 86 to 96...30%
Stoddard Lock Co...30&2½%
"Champion" Night Latches...45%
Barnes Mfg. Co...40@40&10%
Eagle and Corbin Trunk...25&2%
"Champion" Cab. and Combin...33⅓&
Yale...net prices
Romer's...30%

Door Locks, Latches, &c.

R. & E. Mfg. Co., list Mar. 20, 1889... } 65&10@70% Much lower net prices often made.
Mallory, Wheeler & Co., list July, '88...
Sargent & Co., list Aug. 1, '88
Reading Hardware Co., list Feb. 2, '88...
Banford Lock Works...
Brittan, Graham & Mathes, list Jan. 1890...60&10&10%
Perkins' Burglar Proof...60&2½%
Plate...33⅓&2%
Barnes Mfg. Co...40@40&10%
Yale...net prices
Deits Flat Key...30%
L. & C. Round Key Latches...30&10%
L. & C. Flat Key Latches...33⅓&10%
Romer's Night Latches...15%
Brooklyn Latches...60&10%
Sheparidson or U. S...35%
Seed's N. Y. Hasp Lock...33%

Padlocks—

List June 10, 1891...50&2½%
Norwich Lock Mfg. Co., old list...70&2½
Yale Lock Mfg. Co.'s...net prices
Eagle...35&2½
Eureka, Eagle Lock Co...40&2½
Romer's, Nos. 0 to 91...30%
Romer's Scandinavian, &c., Nos. 100 to 505...15%
A. E. Deits...40%
Champon Padlocks...40%
Hotchkiss...30%
Star...30%
Horseshoe...₩ doz., $3. 40@40&10%
Barnes Mfg. Co...40@40&10%
Nock's...30%
Brown's Pat...35%
Scandinavian...90@90&10%
E. T. Fraim's Keystone Scandavian, Nos. 119, 120, 130 and 140...90&10%
Other Nos...35%
Ames Sword Co. up to No. 150...40%
Ames Sword Co. above No. 150...50%
Slaymaker Barry & Co.
No. 1010 line...35&5%
No. 41 line...45&10%
No. 61 line...50&5%
No. 21 line...75%

Sash, &c.

Clark's, No. 1, $10; No. 2, $8 ₩ gr...33⅓&
Ferguson's...33⅓&
Victor...60&10&2%
Walker's...10%
Attwell Mfg. Co...25&33⅓&
Reading...50%&10@50%&10&10%
Hammond's Window Springs...40%
Common Sense, Jap'd, Cop'd and Br'zed...₩ gr $4.00
Common Sense, Nickel Plated...₩ gr $10.00
Universal...20%
Kempshall's Gravity...60%
Kempshall's Model...60@60&10%
Corbin's Daisy, list Feb. 15, 1886...70%
Payson's Perfect...60&10%
Hugunin's Sash Balances...25&5&2%
Hugunin's New Sash Locks...25&5&2%
Stoddard "Practical"...10%
Ives' Patent...60&10@60&10&5%
Fish (Lieseche's pat.), No. 100, ₩ gr., $8; No. 105, ₩ gr., $10...40%
Davis, Bronze, Barnes Mfg. Co...50%
Champion Safety, list January, 1890..70%
Security...70%
Giant, list Jan., 1892...70&2%

Lumber Tools—See Tools, Lumber

Lustre—

Four-ounce Bottles...₩ doz, $1.75; ₩ gross...$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.
Douglas	$5.50	$6.75	50%
Snell's, Ives's Pat.	5.50	6.75	40&10&10%
Jennings	5.50	6.75	45@45&10%
Other Machines...	2.25	2.75	
Phillips' Patent with Augers	7.00	7.50	
Miller's Falls	7.50		35%

Fluting.

Knox, 4¼-inch Rolls...$3.25 each } 35%
Knox, 6-inch Rolls...$3.60 each }
Eagle, 3¼-inch Roll, $2.15... 35%
Eagle, 5¼-inch Roll, $2.85... 35%
Crown, 4½ in., $3.50; 6 in., $4.00; 8 in., $6.50 each... 35%
Crown Jewel 6 in...$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each... 35%
Domestic Fluter...each, $1.50
Geneva Hand Fluter, White Metal ₩ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; $12.50; 3, $10.00... 30%
Shepard Hand Fluter, No. 85 ₩ doz 15 00... 40%
Shepard Hand Fluter, No. 110 ₩ doz $11.00... 40%
Shepard Hand Fluter, No. 95 ₩ doz $8.00... 40%
Clark's Hand Fluter, ₩ doz $15.00... 35%
Combined Fluter and Sad Iron, ₩ doz $15.00... 30%
Buffalo ₩ doz $10.00... 10%

Hoisting—

Moore's Hand Hoist, with Lock Brake... 30%
Moore's Differential Pulley Block... 40%
Energy Mfg. Co's... 35%
Sure Grip Steel Tackle Blocks... 25%

Washing—

Anthony Wayne, ₩ doz No. 1, $51 No. 2, $45; No. 3, $42.
Western Star ₩ doz No. 2, $45; No. 3, $48.
Weisel...₩ doz $54.00
Fair and Square...₩ doz $42.00

Mallets.
Hickory.....30&10@30&10&10%
Lignumvitæ.....30&10@30&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks. Regular list. 60&10@60&10&5%

Measures—
Standard Fiberware, No. 1, peck, ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—See Cutters, Meat.

Menders, Harness—
Per doz.....$2.00

Mills.
Coffee—
Box and Side, List Jan. 1, 1888. 60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg Co. 20&10@30%
The Swift, Lane Bros.....20&10%

Mincing Knives—See Knives, Mincing.

Molasses Gates—See Gates, Molasses.

Money Drawers—See Drawers, Money.

Mowers, Lawn.
Philadelphia.....60&10%
Pennsylvania and Continental.....60%
New Model and Excelsior.....60@70&10%
Other Machines.....60&10&10@75%

Muzzles—
Safety.....₱ dos, $3.00, 25%

Nails.
Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, Apr. 11, '92. 80&10&10%
Tack Mfrs.' list.....70@70&10%
Wire Nails, Standard Penny.
Card June 1 '89 base.....$1.95 @ $2.00

Horse—

	Nos. 6	7	8	9	10	
American	8¼	8¼	8¼	8¼	8¼	net
Acadie	28	26	25	24	23	40&5&2½%
Clinton, Fin.	19	17	16	15	14	30&10%
Essex	28	26	25	24	23	40&10&5&2½%
Lyra	19	17	16	15	14	40&5 %
Snowden	19	17	16	15	14	40&5 %
Putnam	23	21	20	19	18	1000 ₱ in year 15%
Vulcan	23	21	20	19	18	25%
Northwest'n.	25	23	22	21	20	35@35&5%
A. C.	25	23	22	21	21	25&10@33⅓&5%
C. B.-K.	25	23	22	21	21	25&10@33⅓&5%
Maud S.	25	23	22	21	21	40&10&5 %
Champlain	28	26	25	24	23	40&5&5&2%
Saranac	23	21	20	19	18	40&5%
Champion	25	23	22	21	20	10&10&10%
Capewell	19	18	17	16	16	10%
Anchor	23	21	20	19	18	35%
Western	23	21	20	19	18	50%
Empire Bronzed						14 ₱ ₱.

Picture—
Brass Head, Sargent's list.....50&10&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list. 50&10&10%
Porcelain Head, Combination list. 40&10%
Niles' Patent.....40%

Nail Pullers.—See Pullers, Nail.

Nail Sets.—See Sets, Nail.

Nut Crackers.—See Crackers, Nut.

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.35¢	5.9¢ off list.
Cold Punched	5.00¢	5.10¢ off list.

In packages of 100 ₱, add 1-10¢ ₱ ₱. net; in packages less than 100 ₱, add ½¢ ₱ ₱, net.

Oakum—
Best or Government.....₱ ₱ 7@7½¢
U. S. Navy.....₱ ₱ 6@6½¢
Navy.....₱ ₱ 5½¢@6¢

Oilers—
Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammered, Old Pattern, same list.....40%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem P. D. & Co.....₱ gro. $3
Steel, Dreiser and Williams.....50%

Openers, Can.
Messenger's Comet.....₱ dos $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....doz 25¢, 15@20%
Lyman's.....₱ dos $3.75, 20%
No. 4 French.....₱ dos $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ dos $2.50, 10%
Sardine Scissors.....₱ dos $2.75@3.00
Star.....₱ dos $2.75
Sprague, No. 1, $2.00 2, $2.25; 3, $2.50. 50&10&10%
Excelsior No. 1 $2.50; No. 2, $1.50.....40%
World's Best, ₱ gross, No. 1, $12.00. No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ dos $3.00.....55&5%
Domestic, ₱ dos $2.50.....45%
Champion ₱ dos $2.00.....60%

Packing, Steam—
Rubber—
Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard. ₱ ₱ 80¢.....25@25&5%

Miscellaneous—
American Packing.....10¢@11¢ ₱ ₱
Russia Packing.....14¢ ₱ ₱
Italian Packing.....13¢@14¢ ₱ ₱
Cotton Packing.....15¢@17¢ ₱ ₱
Jute.....7¢@8¢ ₱ ₱

Pails.
Galvanized Iron—

	Quarts	10	12	14
Hill's Light Weight, ₱ dz.		$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.		3.00	3.25	3.75
Heiwig's.		2.50	2.75	3.00
Sidney Shepard & Co.		2.35	2.85	3.00
Iron Clad		2.50	2.75	3.00
Fire Buckets		2.75	3.25	3.50

Buckets, see Well Buckets.

Indurated Fibre Ware—25%

Star Pails, 12 qt	₱ dos $5.40
Stable and Milk, 14 qt	₱ dos $6.00
Fire Pails, deep	₱ dos $5.40
" " round bottom	₱ dos $7.80

Standard Fibre Ware—

	Plain.	Decr'd
Water Pails, 12 qt., per dos.	$4.00	$4.50
Dairy Pails, 14 qt., per dos.	4.50	5.00
Fire Pails, No. 1, 12 qt. per dos	4.50	
Fire Pails, No. 2, 14 qt. per dos	5.00	
Sugar Pails	6.00	6.50
Horse Pails	5.00	
Buggy Pails	4.00	
Slop Jars (bal. trap)	8.00	9.00
Chamber Pails, 14-qt.	6.50	7.50

Pans.
Dripping.
Smalls ises.....₱ ₱ 6¼¢
Large sizes.....₱ ₱ 5½¢
Silver & Co. (Covered).....40%

Fry—
Standard List:

No.	0	1	2	3	4
₱ dos.	$3.00	$3.75	$4.25	$4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75&75&10%
Acme Fry Pans.....60&10%

Dust—
Steel Edge, No. 1.....₱ dos $1.75

Paper and Cloth—
Sand and Emery—
List April 19, 1886.....50@50&10%
Sibley's Emery and Crocus Cloth.....30%

Parers.
Apple.
Advance.....₱ dos $4.75
Baldwin.....₱ dos 5.25
Bonanza.....each 5.00
Daisy.....₱ dos 4.00
Dandy.....each 7.50
Eclipse.....₱ dos 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₱ dos 12.00
Favorite.....₱ dos 5.00
Gold Medal.....₱ dos 4.00
Ideal.....₱ dos 4.00
Improved Bay State..₱ dos 27.00 @ 30.00
Little Star.....₱ dos 4.50
Monarch.....₱ dos 13.50
New Lightning.....₱ dos 5.50
Oriole.....₱ dos 4.00
Penn.....₱ dos 4.00
Perfection.....₱ dos 4.00
Pomona.....₱ dos 4.00
Rocking Table.....₱ dos 6.00
Turn Table.....₱ dos 4.50
Victor.....₱ dos 13.50
Waverly.....₱ dos 4.00
White Mountain.....₱ dos 4.00
72.....₱ dos. 4.25
78.....₱ dos. 7.00

Potato—
White Mountain.....₱ dos $4.50
Antrim Combination.....₱ dos $5.50
Hoosier.....₱ dos $13.50
Saratoga.....₱ dos $5.50

Pencils—
Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $6.75
Dixon's Carpenters'.....10%

Picks—
Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&5%

Picture Nails.—See Nails, Picture.

Pinking Irons.—See Irons, Pinking.

Pins.
Box—
Humason, Beckley & Co.'s.....60&10%
Sargent & Co's...$17 and $18.....60&10%
Peck, Stow & W Co... 50&10@50&10&5%
Curtain—
Silvered Glass.....net
White Enamel.....net
Escutcheon,
Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—
List September 18, 1889.

1¼ and under. Plain	67@60&5%
1¼ and under, Galvanised	50@5 &5%
1¼ and over, Plain	70@70&5%
1¼ and over, Galvanised	60@60&5%

Boiler Tubes,
Sizes up to 2¾ in. inclusive...57½@60%
Sizes 3 in. and larger.....60@65%
Casing.....55%
Inserted Joints Casing.....50%
Steel Boiler Tubes.....30%

Planes and Plane Irons—
Wood Planes—
Molding.....40&10%
Bench, First Quality.....50&10%
Bench, Second Quality.....55&10%
Bailey's (Stanley R. & L. Co.)..... 5%&10%
Iron Planes—
Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steer's Iron Planes.....35&35&10%
Merrien Mal. Iron Co.'s.....40&40&10%
Davis's Iron Planes.....40&40&10%
Birmingham Plane Co.....50&50&10%
Gage Tool Co.'s Self-Setting.....20&10&10%
Chaplin's Iron Planes.....40&40&10%
Sargent's.....30&10&30&10&10%
Standard Tool Co.....50&50&5%
Plane Irons—
Butcher's.....$5.00@$5.25 to £
Buck Bros.....30%
Auburn "Thistle."
Ohio.
Sandusky.
} ...30&10%
S. & L. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates.
Felloe.....₱ ₱ 6¢@6½¢

Pliers and Nippers.
Button's Patent.....50&50&10%
Hall's No. 3, 6 in., $13.50; No. 4, 7 in. $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co..50&50&10%
Lindsay's Giant.....40%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P. S. & W. Cast Steel.....50%
P. S. & W. Tinners' Cutting Nippers, add 0% dis 10%
Carew's Pat. Wire Cutters.....30%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in. $21.00, 5%&50&5%
Cronk's Button Pattern.....50&10&50%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—
Regular List.....75&10@75&10&5%
Stanley's Duplex.....30&10%
Stanley's Handy.....20&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....30%
Davis' Inclinometers.....10&10%

Poachers.
Egg.
Buffalo Steam Egg Poachers, ₱ dos, No. 1, $6.00; No. 2, $9.00.....25%
Silver & Co., 6-Ring..₱ dos $4; 3-Ring $2

Pokes, Animal—
Bishop's I. X. L.....₱ dos $6.00
Bishop's O. K.....₱ dos $5.25
Bishop's Pioneer.....₱ dos $3.75
Bishop's American.....₱ dos $2.75
Eagle, Double Stale.....₱ dos $5.75
Eagle, Single Stale.....₱ dos $3.75
Buckeye, Single Stale.....₱ dos $2.75
Bo ding.....₱ dos $4.00

Police Goods.
R. I. Tool Co., Handcuffs, $15.00 ₱ dos 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ dos 10%
Tower's.....25%
Daley's Improved Handcuffs: 2 Hands, Polished, ₱ dos $48.00; Nickeled, $57.00; 3 Hands, Polished, ₱ dos $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish, Metal.
Prestoline.....30%
Prestosine Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Polish, Stove.
Joseph Dixon's.....₱ gro $6.00, 10%
Gem.....₱ gro $4.50, 10%
Gold Medal.....₱ gro $6.00, 25%
Mirror.....₱ pro $6.00, —%
Lustro.....₱ gro $4.75
Ruby.....₱ gro $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ₱ 8¢
Boynton's Noon Day, ₱ gro.....13.00
Parlor Pride Stove Enamel..₱ gro
Yates' Liquid, 2 3 5 10 gal....
₱ gal ...$0.30 .70 .00 .50
Yates Standard Paste Polish, 10-₱ cans, ₱ ₱ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish..₱ gro $9.00
Bonnell's Paste Stove Polish..₱ gro $6.00
Black Eagle Bensine Paste, 5 and 10 ₱ cans.....12½¢
Black Jack Water Paste, 5 and 10 ₱ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gross, $7.20
Crown Paste, in 5 and 10 ₱ pails ₱ ₱ 12¢
Black Flag.....₱ gross, $7.20
Black Flag, 5 and 10 ₱ pails.....₱ ₱ 12¢
Black Flag, liquid, in bottles, ₱ gro..$8.00
Diamond Rock Nickel Cleaner..₱ gro $10.20

Poppers, Corn—
Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—See Diggers, Post Hole, &c.

Potato Parers—See Parers, Potato.

Pots.
Glue—
Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Presses.
Fruit and Jelly—
Enterprise Mfg. Co.....20&10@30%
Henis.....₱ dos $3.50
Shepard's "Queen City".....40%
Silver & Co.....₱ dos $2.75

Pruning Hooks and Shears.—See Shears.

Pullers.
Nail.
Scranton.....₱ dos $18.00, 33⅓%
Curtiss Hammer.....₱ dos $9.00
Giant, No. 1.....₱ dos, $13.00, 10%
Giant, No. 2.....₱ dos, $15.00, 10%
Pelican.....₱ dos, $9.00, 25%
Eclipse.....each, $2.00 net
Economy.....₱ dos $6.00

Pulleys—
Hot House, Awning, &c.....60&10%
Japanned Screw.....60&10%
Brass Screw.....60&10%
Japanned Side.....60%&10%
Japanned Clothes Line.....60&10%
Empire Sash Pulley.....55&60%
Moore's Sash, Anti-Friction.....50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50.....50&10&50&10&5%
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70.....50%
Hay Fork, "F" Common and Pat. Bushed.....20%
Hay Fork, Tarbox Pat. Iron.....20%
Hay Fork, Reed's Self-Lubricating ...50%
Shade Rack.....45%
Tackle Blocks.....See Blocks
Moore's Anti-Friction 5 in. Wheel, ₱ dos $12.00.....40%

Pumps—
Cistern, Best Makers.....60@60&10%
Pitcher Spout, Best Makers.....67½@70%
Pitcher Spout, Cheaper G'ds..75@75&10%

Punches—
Saddlers' or Drive, good, ₱ dos...60@65%
Bemis & Call Co.'s Cast Steel Drive..50&5%
Bemis & Call Co's Springfield Socket. 50&5%
Spring, good quality....₱ dos $2.50@2.66
Spring, Leach's Pat.....15%
Bemis & Call Co.'s Spring and Check ..40%
Solid Tinners', P. S. & W. Co., ₱ doz $1.44, 55%
Tin'rs' Hollow Punches P. S. & W. Co. 20&2%
Rice Hand Punches.....15%
Avery's Revolving.....40%
Avery's Saw-Set and Punch. See Saw Sets.

Rail—
Sliding Door, Wr't Brass, ₱ ₱ 35¢.....15%
Sliding Door, Bronzed Wr't Iron...₱ ft. 7¢
Sliding Door, Iron, Painted, ₱ foot 4¢, 40%
Barn Door, Light. In. ½ ¾ 1
Per 100 feet.....$2.00 2.50 3.10, 10%
B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 set.....$2.15 2.70 3.25 net
Terry's Steel Rail, ₱ foot.....4½¢
Victor Track Rail, 7¢ ₱ foot.....50&5%
Carrier, double braced, Steel Rail, ₱ foot.....4@4½¢
Moore's Wrought Iron.....25%

Rakes—
Cast Steel, Association goods...65%@70%
Cast Steel, outside goods 60&10&10@70&5%
Malleable.....70&70&5%
Gibbs Lawn Rake.....₱ dos $1.90
Canton Lawn Rake.....₱ dos $3.75
Favorite Lawn Rake.....₱ dos $4.40
Ft. Madison Prize Bow Brace and Peerless.....30%
Fort Madison Steel Tooth Lawn Rake, $6.00.....35%

Razors—
J. R. Torrey Razor Co.....30%
Wostenholme and Butcher, $10 to $..10%
Jordan's AAAI, new list.....net
Jordan's Old Faithful, new list.....net
Galvanic.....₱ dos $15.00
Electric Cultery Co.....Net

Razor Strops—See Strops, Razor.

Rings and Ringers.
Bull Rings—
Union Nut Co.....55%
Sargent's.....60%&10@70&5%
Hotchkiss' low list.....30%
Humason, Beckley & Co.'s.....70&10%
Peck, Stow & W. Co's..50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%
Hog—
Top of the Hill Ringers.....₱ dos $2.00
Top of the Hill Rings.....₱ dos $1.35
Hill's Improved Ringers.....₱ dos $1.35
Hill's Old Style Ringers.....₱ dos $1.12½
Hill's Tongs.....₱ dos $3.00
Hill's Rings.....₱ dos bxs $1.00
Perfect Rings.....₱ dos bxs $1.50
Perfect Ringers.....₱ dos $2.15@$2.25
Blair's Hog Ringers.....₱ dos $2.00
Blair's Hog Rings.....₱ dos ₱₱@$1.00
Champion Ringers.....₱ dos $2.00
Champion Rings, Double.....₱ dos $2.25
Brown's Ringers.....₱ dos $2.00
Brown's Rings.....₱ dos $1.15@1.25
Electric Hog Rings....₱ dos boxes $1.50
Electric Hog Ringers.....₱ dos $2.00
Major Rings.....₱ doz $1.25
Major Ringers.....₱ dos $2.00

Rivets and Burrs—
Iron, list Nov. 17, '87.....40%
Copper.....60&10%
Copper Combination Iron, Bettina Brand.....40%

Rivet Sets—See Sets.

Rods—
Stair, Brass.....25&2½%
Stair, Black Walnut.....₱ dos 40¢

Rollers—
Barn Door, Sargent's list.....60&10&10%
Acme Moore's Anti-Friction.....55%
Union Barn Door Roller.....70%

Rope.
Manila, 7-16 in. diam. and larger ₱ ₱ 12¼¢
Manila.....⅜ in. ₱ ₱ 12¾¢
Manila.....¼ and 5-16 in. ₱ ₱ 13¼¢
Manila Tarred Rope.....₱ ₱ 11¾¢
Manila, Hay Rope.....₱ ₱ 12¼¢
Sisal.....7-16 inch and larger ₱ ₱ 10¼¢
Sisal.....⅜ in. ₱ ₱ 10¾¢
Sisal.....¼ and 5-16 in. ₱ ₱ 11¼¢
Sisal, Hay Rope.....₱ ₱ 10¾¢
Sisal, Tarred Rope.....₱ ₱ 9¾¢
Sisal, Medium Lath Yarn.....₱ ₱ 9¾¢
New Zealand..7-16 in. & larger ₱ ₱ 8¾¢
New Zealand.....⅜ inch, ₱ ₱ 9¼¢
New Zealand..¼ and 5-16 inch, ₱ ₱ 9¾¢
New Zealand, Hay Rope.....₱ ₱ 8¾¢
New Zealand, Tarred Rope.....₱ ₱ 8¼¢
Note.—Manufacturers' prices on above 1¢ ₱ ₱ less, f. o. b. factory—less 1½ % for cash.
Cotton Rope.....₱ ₱ 13¼@16¢
Jute Rope.....₱ ₱ 6¼@7¢
Wire—
List February, 1892.
All kinds.....45%

Rules—
Boxwood.....80&10&10%
Ivory.....50@50&10%
Starrett's Rules and Straight Edges, Steel.....25&10%

Sad Irons—See Irons, Sad.

Sand and Emery Paper and Cloth—See Paper and Cloth, Sand and Emery

Sash Cord—See Cord, Sash.

Sash Locks—See Locks, Sash.

Sash Weights—See Weights, Sash.

Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.

Saws—The following prices are often cut by jobbers.
Disston's Circular.....45@45&5%
Disston's Cross Cuts.....45@45&5%
Disston's Hand.....30@20&5%
Woodrough & McParlin.
Hand, Panel and Rip.....25@25&5%
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@20¢
Champion Thin Back Cross Cuts, ₱ foot.....26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....29@31¢
One Man Champion Cross Cuts, ₱ foot.....37@40
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip.....3@3&5%
Narrow Champion Cross Cuts with Handles, ₱ foot.....18@20¢
Champion Thin Back Cross Cuts, ₱ foot.....26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot.....29@31¢
One Man Champion Cross Cuts, ₱ ft.. 37@40
Atkins' Circular Shingle & Heading..50%
Atkins' Silver Steel Diamond X Cuts ₱ foot 70¢
Atkins' Special Steel Dexter X Cuts ₱ foot 50¢
Atkins' Special Steel Diamond X Cuts ₱ foot 33¢
Atkins' Champion and Electric Tooth X Cuts.....₱ foot 30¢
Atkins' Hollow Back X Cuts..₱ foot 20¢
Atkins' Mulay, Mill and Drag.....40%
Atkins' One-Man Saw, with handles, ₱ foot 40¢
Peace Circular and Mill.....45@45&5%
Peace Hand Panel and Rip....25@25&5%
Peace Cross Cuts.....45@45&5%
Richardson's Circular and Mill.40@45&5%
Richardson's X Cuts.....45@45&5%
Richardson's Hand, &c.....25@25&5%
C. R. Jennings & Co., Hand, Panel and Rip.....25@25&10%

Hack Saws—

Griffin's, complete. ....40&10@10%
Griffin's Hack Saw, Blades....40&10@50%
Star Hack Saws and Blades....25%
Eureka and Crescent....25%

Scroll—

Lester, complete, $10.00....25%
Rogers, complete, $4.00....25%
Barnes' Builders' and Cab. Makers' $15.25%
Barnes' Scroll Saw Blades....35%

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality, ₱ dos $21.00
Hatch, Tea, No. 161....₱ dos $6.75@$7.00
Union Platform, Plain....$2.10@$2.20
Union Platform, Striped....$2.40@$2.50
Chatillon's Grocers' Trip Scales....50%
Chatillon's Eureka....25%
Chatillon's Favorite....40%
Family, Turnbulls....30@30&10%
Richie Bros.' Platform....40%

Scale Beams—See Beams, Scale.

Scissors, Fluting....45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.50....30&10%
Box, 1 Handle....₱ dos $4.00. 10%
Box, 2 Handle....₱ dos $6.00, 10%
Defiance Box and Ship....30&10%
Foot....50&10@60%
Ship, Common....₱ dos $3.50 net
Ship, R. I. Tool Co....10%

Screen Window and Door Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Bench and Hand—

Bench, Iron....55&10@55&10&10%
Bench, Wood, Beech....₱ dos $2.25
Bench, Wood, Hickory....20&10%
Hand, Wood....25&10@25&10%
Hand, Grand Rapids, list....5%
Lag, Blunt Point, list Jan. 1, 1890.75&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890....75@75&10%
Pod....25&5%
Hand Rail, Sargent's....60%&10%
Hand Rail, H. & P. Mfg. Co....70&10@75%
Hand Rail, Am. Screw Co....75%
Jack Screws, Millers Falls list....50@50&5%
Jack Screws, P. S. & W....35%
Jack Screws Sargent....60&10@60&10&5%
Jack Screws Stearns....40@40&10%

Cork—

Humason & Beckley Mfg. Co..40&10@50%
Williamson's....33⅓@33⅓&5%
Howe Bros & Hulbert....35%

Machine—

Flat Head, Iron....55%
Round Head, Iron....50%

Wood—

List January 1, 1891.

Flat Head Iron	70	Extra 10 @ 10&10 % off given.
Round Head Iron	65	
Flat Head Brass	70	
Round Head Brass	65	
Flat Head Bronze	70	
Round Head Bronze	65	
Rogers' Drive Screws	32½	

Scroll Saws—See Saws, Scroll.

Scythes.

Grain....40&5@40&10%
Grass....40&10@50%

Scythe Snaths—See Snaths, Scythe

Sets.

Awl and Tool.

Aiken's Sets, Awls and Tools, No. 20, ₱ dos $10.00....55&10%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9....25@55&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18....25%
Henry's Combination Hatt...₱ dos $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50....50&10%
Common Brad Sets, No. 42, $10.50; No. 48, $12.50..70&10@5%

Nail—

Square....₱ gr., $4 00@$4.25
Round....₱ gr. $3.25
Buck Bros....27½%
Cannon's Diamond Point...₱ gr..$12, 20%

Rivet,

Regular list....50&10%

Saw—

Stillman's Genuine...₱ dos $5.00@7.75, 40&5%
Stillman's Pattern Hand, ₱ dos $5.25; Cross Cut, 5.25....45@60%
Common Lever....₱ dos $2.00, 45@50%
Morrill's No. 1, $15.00; Nos. 2&4, $24.00, 40&10@50%
Leach's...No. 0, $8.00; No. 1, $15, 15@20%
Nash's....20&10@20&10&10
Hammer, Hotchkiss....$5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. 30&5%
Bemis & Call Co.'s Lever and Spring Hammer....30&5%
Bemis & Call Co.'s Plate....10%
Bemis & Call Co.'s Cross Cut....12½%
Aiken's Genuine....$13.00, 50&10@60%
Aiken's Imitation....$7.00, 55&5%
Hart's Pat. Lever....20%
Disston's Star....25%
Leopold....40&10@50%
Atkin's Lever....₱ dos No. 1, $6.00
Atkin's Criterion....₱ dos No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00....40&10%
Avery's Saw Set and Punch....50%
Chieftain Co.'s Superior....₱ dos $7.00
Chieftain Co.'s Royal....₱ dos $7 50
Crescent....₱ dos $8 00
Lloyd's Acme....₱ doz $15.00, 40&10%

Sharpeners, Knife.

arkins.

Applewood Handles....₱ dos $6.00, 40%
Rosewood or Cocobo a. ₱ dos $900 40%

Shaves, Spoke

Iron....45%
Wood....30%
Bailey's (Stanley R. & L. Co.)....40&10%
Stearns'....30&10%
Cincinnati....25&10%
Goodell's, ₱ dos $9.00....25%

Shears—

American (Cast) Iron...75&10@75&10&5%
Barnard's Lamp Trimmers...₱ dos $3.75
Tinners'....20&2%
Seymour's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's, List, Dec., 1881. 60&10&10@60&10&10&5%
Heinisch's Tailor's Shears....33⅓%
Cast Steel Trimmers: First quality....30@30&10%
Second quality....30&10@30&10&10%
Acme Cast Shears....10&10%
Diamond Cast Shears....10%
Clipper....10&10%
Victor Cast Shears....75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel....40%
Chicago Drop Forge & F. Co., Solid Steel Forged....60%
Davenport Cutlery Co....60@60&10%
Clauss Shear Co., Japanned....70%
Clauss Shear Co., Nickeled, same list. 60%
Galvanic 3¼ to 9 in, ₱ dos, $1.00 ₱ inch
Electric Cutlery Co....Net

Pruning Shears and Hooks.

Disston's Combined Pruning Hook and Saw....₱ dos $18.00, 20&10%
Disston's Pruning Hook, ₱ dos $12.00, 20&10%
E. S. Lee & Co.'s Pruning Tools....40%
Pruning Shears, Henry's Pat, ₱ dos $3.75@4.00
Henry's Pruning Shears, ₱ dos $4.25@4.50
Wheeler, M. & C. Co.'s Combination, ₱ dos $12.00, 20%
Dunlap's Saw and Chisel, ₱ dos $8.50, 20%
J. Mallinson & Co., No. 1, $5.25; No. 2 7.25
P., S. & W. Co....60%

Tinners', &c.—

Shears and Snips (P. S. & W.)....20@25%
Snips, J. Mallinson & Co....33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888..50&10@60&5%
R. & E., list Dec. 18, 1885....55&20%
Corbin's list....60&10&2%
Patent Roller....60&10&2%
Patent Roller, Hatfield's....75%
Russell's Anti-Friction, list Dec. 18, 1885....60&2%
Moore's Anti-Friction....60%

Sliding Shutter—

R. & E. list Dec. 18, 1885....60&10&2%
Sargent's list....60&10%
Reading list....60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list)....30&10&2%
Trise....40&2%
Star, Club, Rival and Climax brands. 33⅓&10&2%
Selbold's Comb. Shot Shells....15&2%
Brass Shot Shells, 1st quality....60&2%
Brass Shot Shells, Club, Rival, Climax.. 65&2%

Shells Loaded—

Standard List, July 19, 1890. 40&10&10@40&10&10&5%

Ship Tools—

L. & I. J. White....20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix and Bryden's Boss, at factory....$4.00
Bryden's Frog Pressure, at factory.$5.00

Mule—

Add $1 ₱ keg to above prices.

Ox, Wrought—

Ton lots....₱ ₺ 9¢
1000 ₺ lots....₱ ₺ 9½¢
500 ₺ lots....₱ ₺ 10¢

Shot—

	Ton lots	Small lots
Drop, up to B, 25-₺ bag	$1 25	$1.30
Drop, up to B, 5-₺ bag	.35	.35
Drop, B and larger, 25-₱ bag	1.50	1.55
Drop, B and larger 5-₺ bag	.40	.40
Buck and Chilled, 25-₺ bag	1.50	1.55
Buck and Chilled, 5-₺ bag	.40	.40
Dust Shot, 25-₺ bag	1.95	2.00
Dust Shot, 5-₺ bag	.45	.45

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885....20%
NOTE.—Jobbers frequently give 5&7½% extra on above.
Griffith's Black Iron....50&10%
Griffith's C. S....60@60&10%
Griffith's Solid C. S. R. R. Goods....20%
St. Louis Shovel Co....20@20&7½%
Hussey, Binns & Co....15@25%
Hubbard & Co....20@20&7½%
Lehigh Mfg. Co....50&10%
H. M. Myers Co....30%
Payne Pettebone & Son....33⅓&5%
Remington's (Lowman's Pat.)30&10@40%
Rowland's, Black Iron....50&10%
Rowland's Steel....60&5@60&10%

Shovels and Tongs—

Iron Head....60&10@60&10&5%
Brass Head....60&10&10%

Sieves—

Mann's Tin Rim....50&25%
Buffalo Metallic, S. S. & Co....50&25%
Shaker (Barler's Pat.) Flour Sifters....₱ dos $2.00; ₱ gr $21.60
Electric....₱ gr $21.00
A. & W. Sifters....₱ dos 2.00
Hunter's....₱ dos $2.00

Sieves, Wooden Rim—

	Iron.	Plated
Mesh 18, Nested, ₱ dos..	80¢	$1.00
Mesh 20, Nested, ₱ dos..	95¢	1.10
Mesh 24, Nested, ₱ dos..	$1.15	1.25

Skeins, Thimble—

Western list....75&5@75&10%
Columbus Wrt. Steel..Special net prices
Coldbrookdale Iron Co....60%
Seneca Falls Pattern....60%
Utica P. S. T. Skeins....60%
Utica Turned and Fitted....35%

Slates—

School, by case....50&10@50&10&10%

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Pitcn's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
E. Covert's Triumph....33⅓%

Snaths, Scythe.

List....50%

Soldering Irons—See Irons, Soldering.

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼ inch, ₱ dos., No. 5, $8; No. 6X $9.
Spittoons, Daisy, 8-inch, No. 1, $4; 10 and 11 inch, $6.

Spoke Shaves—See Shaves, Spoke.

Spoke Trimmers—See Trimmers, Spoke.

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo S. S. & Co....33⅓&2%

Silver-Plated—(4 mos. or 5% cash 30 days).

Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bro....40&15%
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co...40, 15&5%
L. Boardman & Son....50&12½%

Miscellaneous.

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%
Wm. Rogers Mfg. Co.
Rogers' Silver Metal....50, 10&5%
182 Rogers' German Silver....60&5%
224 Rogers' Nickel Silver....50&5%
German Silver....50@50&5
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Britannia....60@60&5%
Boardman's N'ck'l Silver, list July 1, 1891....60&7½@5%
Boardman's Britannia Spoons, case lots....60&5% cash

Springs—

Door,—

Torrey's Rod, 39 in....₱ dos $1.20@1.25
Gray's, ₱ gr., $20.00....25%
Bee Rod ₱ gr., $20.00....20@25%
Warner's No. 1, ₱ doz., $2.50; No. 2, $3.20....50@50&5%
Gem (Coil), list April 19, 1886...10@15%
Star (Coil), list April 19, 1886...20@2 &5%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's....No. 1, ₱ dos, $12.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ dos, $4.50....65&10%
Hercules....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....60&10&10%
Cliff's Bolster Springs....25%

Squares—

Steel and Iron....
Nickel-Plated....
Try Square and T Bevels...60&10@40&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares. 25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers.

Fodder,—

Blair's....₱ dos $2.00
Blair's "Climax"....₱ dos $1.25

Lemon—

Porcelain Lined, No. 1....₱ dos $6.00, 25&20%
Wood, No. 2....₱ dos $3.00, 35%
Wood, Common....₱ dos $1.70@1.75
Dunlap's Improved....₱ dos $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ dos....25&10%
Jennings' Star....₱ dos $2.50
The Boss....₱ dos $2.50
Dean's...Nos. 1, ₱ dos $6.50; 2, $8.25; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ dos $12.00
Silver & Co., Glass....₱ gro. $9.00
Manny Lemon Juice Extractor:
Standard....₱ dos $0.75@$1 00
Improved....₱ dos $4.00

Standard Fiber Ware—See Ware, Standard Fiber.

Staples.

Blind—

Barbed, ½ in. and larger....₱ ₺ 7@7½¢
Barbed, ¾ in....₱ ₺ 8@8½¢
Fence Staples, Galvanized, Fence Staples, Plain.... Same price as B'rb'd Wire See Trd. Rep

Steelyards....40&10@50%

Stocks and Dies—

Blacksmith's
Waterford Goods....33⅓&10
Butterfield's Goods....33⅓&10
Lightning Screw Plate....25&5%
Reece's New Screw Plates....33⅓&5&10%
Reversible Ratchet....30
Gardner....33⅓

Stops, Bench.

Morrill's....₱ dos $9.50
Hotchkiss's....₱ dos $5 10@10%
Weston's, No. 1, $10; No. 2, $9.25&10&5%
McGill's....₱ dos $5....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%

Stone—

Hindostan No. 1, 3¢; Axe, 3¼¢; Slips No. 1, 4½¢
Sand Stone....₱ ₺ 2½¢
Washita Stone, Extra....₱ ₺ 23@33⅓¢
Washita Stone, No. 1....₱ ₺ 19@30¢
Washita Stone, No. 2....₱ ₺ 12@13¢
Washita Slips, No. 1, Extra....₱ ₺ 44@46¢
Washita Slips, No. 1....₱ ₺ 33@35¢
Arkansas Stone, No. 1, 4 to 6 in....₱ ₺ $1.50
Arkansas Stone, No. 1, 6 to 9 in....₱ ₺ $1.85
Turkey Oil Stone, 4 to 8 in....₱ ₺ 40¢
Turkey Slips....₱ ₺ $1.00@$1.50
Lake Superior, Chase....₱ ₺ 12½¢
Lake Superior Slips, Chase....₱ ₺ 20¢
Seneca Stone, Red Paper Brand....₱ ₺ 15@20¢
Seneca Stone, High Rounds....₱ ₺ 20@25¢
Seneca Stone, Small Wheels....₱ gro $24.00

Stove Polish—See Polish, Stove.

Stretchers, Carpet.

Cast Steel, Polished....₱ dos $2.25
Cast Iron, Steel Points....₱ dos 30¢
Socket....₱ dos $1.75
Gullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation "....₱ dos $2.00, 20&10&5%
Torrey's....30%
Badger's Belt and Cone....₱ dos $2.00
Lamont Combination....₱ dos $4.50
Jordan's Pat. Padded, list Nov. 1, '86, 50%
Electric Cultery Co....Net

Stuffers or Fillers, Sausage—

Miles' "Challenge," ₱ dos $20, 50&5&2½
Perry....₱ dos, No. 1, $15.00; No. 0, $21.00....50&5&50&10%
Draw Cut No. 4, each $30.00....30%
Enterprise Mfg. Co....20&10&2½%
Silver's....40&10%

Sweepers, Carpet.

Bissell No. 5....₱ dos $17.00
Bissell No. 8....₱ dos 120.00
Bissell, Grand....₱ dos $30.00
Stand rd....₱ dos $24.00
Domestic....
Domestic, No. 2....₱ dos $21.00
Grand Rapids....₱ dos $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ dos $15.00
Improved Parlor Queen, Nickeled....₱ dos $27.00
Japanned....₱ dos $24.00
Excelsior....₱ dos $22.00
Garland....₱ dos $18.00
Parlor Queen....₱ dos $24.00
Housewife's Delight....₱ dos $15.00
Queen....₱ dos $16.00
Queen, with band....₱ dos $18.00
King....₱ dos $30.00
Weed, Improved....₱ dos $18.00
Hub....₱ dos $16.00
Cog-Wheel....₱ dos $16.00
Easy....₱ dos $22.00
Monarch....₱ dos $32.00
Goshen....₱ dos $21.00
Ladies' Friend....₱ dos $18.00
Advance....₱ dos $18.00
Supreme....₱ dos $22.00

Tacks, Brads, &c.—

List October 19, 1889 Old established standard Weight Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....72½%
American Tin'd and Cop'd....70%
Steel, Bright and Blued....72½%
Steel, Tinned and Coppered....5%
Swedes Iron, Blued....75%
Swedes Iron, Tinned....75%
American Iron Tacks....74%

Swedes Iron Tacks—
S. S., Blued....71¢
S. S., Tinned....74¢
Lanc., Blued....60¢
Lanc., Tinned....63½%

Gimp and Lace Tacks—
S. S., Blued....67½%
S. S., Tinned....71%
Lanc., Blued....60¢
Lanc., Tinned....63½%

Basket and Trimmers' Tacks—
Lanc....67½%
S. S....69¢%
Hungarian Nails....67½%
Common and Patent Brads....60%
Leathered Tacks....70%
Brush Tacks....63¢%
Looking Glass Tacks....35%
Picture-Frame Points....43½%
Finishing Nails....60%
Trunk and Clout Nails—
Black....67½%
Tinned or Coppered....71%
Basket Nails....71¢%
Chair Nails....58½%
Cigar-Box Nails....55%
Tin Capped Nails....50%

Miscellaneous—
D'ble Point 12 count 85&10@85&10&10%
Double Point, 100 count....90%
Wire Carpet Nails....80&10%
Plymouth Rock Steel Carpet Tacks..25%
Wire Brads and Nails, see Nails, Wire.
Steel-Wire Brads, R. & S. Mfg. Co.'s list....60&10%

Extra discount 50&2%

Tapes, Measuring—

American....40@40&5%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....30@30&10%

Thimble Skeins—See Skeins.

Ties, Bale St
Standard Wire, list....50&10&5%

Tinners' Shears, &c.—See Shears Tinners' &c

Tinware—
Stamped, Japanned and Pieced, list Jan. 20 1887.....70&10@70&25%

Tire Benders, Upsetters, &c—
See Benders and Upsetters, Tire.

Tools.
Coopers'—
Bradley's.....30%
Barton's.....30@30&5%
I. & I. J. White.....30&5%
Albertson Mfg. Co.....25%
Beatty's.....30%
Sandusky Tool Co.....30@30&5%
Shaves, Cincinnati Tool Co.....30%

Lumber.
Ring Peavies, "Blue Line"...₩ doz $20.00
Ring Peavies, Common.....₩ doz $18.00
Steel Socket Peavies.....₩ doz $21.00
Mall. Iron Socket Peavies....₩ doz $19.00
Cant Hooks, "Blue Line"....₩ doz $16.00
Cant Hooks, Common Finish..₩ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish.....₩ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish.....₩ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.....₩ doz $12.00
Hand Spikes....₩ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₩ doz., 13 ft., $11.50; 14 ft., $12.50; 15 ft., $14.50; 16 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₩ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $12.00; 18 ft., $16.00; 20 ft., $20.00.
Pike Poles, not ironed, ₩ doz, 12 ft. $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₩ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00
Swamp Hooks.....₩ doz $13.00

Saw.
Atkins' Perfection.....₩ doz $12.00
Atkins' Excelsior.....₩ doz $6.00
Atkins' Giant.....₩ doz $4.00

Tobacco Cutters—See Cutters, Tobacco.

Transom Lifters — See Lifters, Transom.

Traps—
Game—
Newhouse.....40@40&5%
Oneida Pattern.....70&10%
Game, Blake's Patent.....40&10&5%
Mouse and Rat—
Mouse Wood, Choker, ₩ doz holes, 9@10¢
Mouse, Round Wire.....₩ doz $1.50 10%
Mouse, Cage, Wire.....₩ doz $2.50, 10%
Mouse, Catch-'em-alive....₩ dz $2.50 15&
Mouse, Bonanza.....₩ doz $0.90@$1.00
Rat, Decoy.....₩ gr $10.00, 10%
Ideal.....₩ gr $10.00
Cyclone.....₩ gr $5.38
Hotchkiss Metallic Mouse, 5-hole traps, ₩ doz., 75¢; in full cases, ₩ doz 60@65¢
Hotchkiss Imp. Rat Killer..₩ gro $18.50
Hotchkiss New Rat Killer...₩ gro $16.50
Schuyler's Rat Killer.....₩ gro $15.00

Triers—
Butter and cheese.....25%

Trimmers, Spoke.
Bonney's.....₩ doz $10.00, 50%
Stearns'.....20&10%
Ives', No. 1, $15.00; No. 2, $13.00 ₩ doz. 55&10%
Douglas'.....₩ doz $9.00, 20%
Cincinnati.....25%

Trowels—
Lothrop's Brick and Plastering, 20&10&5@35%
Reed's Brick and Plastering.....15%
Disston's Br'k and Plastering...35@25&5%
Peace's Plastering.....25@.5&2½
Clement & Maynard's.....20@.5&2½
Rose's Brick.....15@20%
Brade's Brick.....25%
Worrall's Brick and Plastering.....20%
Garden.....70%
Cleves' Angle Trowel.₩ gro.$15, net @10%

Trucks, Warehouse, &c.—
B. & L. Block Co.'s list, '92.....40%

Tubes, Boiler—
See Pipe.

Twine—

Flax Twine—	BC.	B.
No. 9, ¼ and ⅛ ℔ Balls	25¢	31¢
No. 12, ¼ and ⅛ ℔ Balls	22¢	30¢
No. 15, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 24, ¼ and ⅛ ℔ Balls	20¢	29¢
No. 36, ¼ and ⅛ ℔ Balls	18¢	28¢
No. 204, Mattress, ¼ and ⅛ ℔ Balls	52@54¢	
Chalk Line, Cotton, ⅛ ℔ Balls	25¢	
Mason Line, Linen, ⅛ ℔ Balls	55¢	
2-Ply Hemp, ¼ and ⅛ ℔ Balls (Spring Twine)	15½¢	
3-Ply Hemp, 1 ℔ Balls	16@16½¢	
3-Ply Hemp, 1½ ℔ Balls	15½@15¾¢	
Cotton Wrapping, 5 Balls to ℔	15@16¢	
2, 3, 4 and 5-Ply Jute, ¼ ℔ Balls	10¢	
Wool	6½@6¾¢	
Paper	13½@14¢	
Cotton Mops, 6, 9, 12 and 15 ℔ to doz.	18¢	

Vises—
Solid Box.....50&10@50&10&2½
Parallel—
Fisher & Norris Double Screw.....15&10%
Stephens'.....25@30%
Parker's.....20@25%
Wilson's.....55%
Howard's.....40%
Bonney's.....40&10%
Millers Falls.....40@40&10%
Trenton.....40&5@40&10%
Merrill's.....15@20%
Sargent's.....60&10&10%
Backus and Union.....40%
Double Screw Leg.....15&10%
Prentiss.....30@35%
Simpson's Adjustable.....40%
Moore's.....30%
Massey Quick Action.....30 @ 25 %

Saw Filers—
Bonney's, Nos. 2 & 3, $15.00.....40&10%
Stearn's.....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises.....35⅓@35%
Sargent's.....60%&10%
Hopkins'.....$8.50, 10%
Reading.....40&10%
Wentworth.....30&10%

Miscellaneous.
Combination Hand Vises.....₩ gr $42.00
Cowell Hand Vises.....30%
Bauer's Pipe Vises.....10%
Cincinnati.....25&10%
Enterprise Pipe Vises, each.....$3.00
Massey Combination Pipe.....40 %

Wads—Price per M.

U.M.C.&W. R. A.—B. E., 11 up...	68¢
U.M.C.&W. R. A.—B. E., 9&10...	83¢
U.M.C.&W. R. A.—B. E., 8.....	96¢
U.M.C.&W. R. A.—B. E., 7.....	$1.10
U.M.C.&W. R. A.—P. E., 11 up..	1.15
U.M.C.&W. R. A.—P. E., 9&10..	1.50
U.M.C.&W. R. A.—P. E. 8.....	1.70
U.M.C.&W. R. A.—P. E., 7.....	1.80
Eley's B. E., 11 up.....	$1.70@$1.75
Eley's P. E., 11@20.....	3.00@ 3.25

DISCOUNT

Wagon Boxes—See Boxes, Wagon.

Washer Cutters—See Cutters, Washer.

Wagon Jacks—See Jacks, Wagon.

Ware, Hollow, Enameled, &c.
Cast Iron, Hollow—
Stove Hollow-Ware—
Ground.....60&10%
Unground.....60&10&10%
White Enameled-Ware—
Maslin Kettles.....75@75&5%
Boilers and Saucepans.....60@60&5%
Tinned Boilers and S'pans.....60@60&5%
Rustless Hollow-Ware.....60@50&5%
Gray Enameled-Ware—
Stove.....50%
Maslin Kettles.....60&10&10%
Boilers and Saucepans.....40&5%
Enameled—
Agate and Granite Ware, list Jan. 1, 1889.....33⅓&10%
Ironclad Enameled Ware...dis 33⅓&10%
Kettles—
Galvanized Tea-Kettles—

Inch....	6	7	8	9
Each....	55¢	60¢		75¢

Standard Fiber—

	Per Dozen. Plain.	Dec'r'd
Wash-Basins, 10½ in.	$2.00	$2.25
Wash-Basins, 12 in.	2.25	2.75
Keelers, 11¼ in.		4.00
Cuspidors.		3.00
Spittoons, "Daisy," 8 in....	4.00	4.50
Peck Measure.	4.00	
Half-peck Measure.	3.50	

See also Pails.
Indurated Fiber—25%
Spittoons, No. 2, ₩ doz.....$3.40
Basins, Ringed, ₩ doz., No. 2.....$3.00
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₩ nest.....$7.50
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₩ nest.....$3.90
Butter Bowls 15, 17 and 19-inch (3 pieces), ₩ nest.....$1.70
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces) ₩ set.....$1.60
See also Pails.
Silver Plated, Hollow—
4 mo. or 5 % cash in 30 days.

Reed & Barton.....	40&5%
Meriden Britannia Co.....	
Simpson, Hall, Miller & Co.....	
Rogers & Brother.....	
Hartford Silver Plate Co.....	40&5&5%
William Rogers Mfg. Co.....	

Washers—

Size hole.....	5-16	⅜	½	⅝ to 1⅜
Washers.....	6	5	3.50¢	3

In lots less than 200 ℔, ₩ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Wedges—
Iron.....₩ ℔ 2½¢
Steel.....₩ ℔ 3½¢

Weights, Sash—
Solid Eyes.....₩ ton $15@$19

Well Buckets, Galvanized—See Buckets, Well, Galvanized.

Wheels, Well.
8 in., $2.35; 10 in., $2.70; 12 in., $3.20

Wire and Wire Goods—
Iron—
Market.
Br. & Ann., Nos. 0 to 18.. 75&10@80%
Cop'd, Nos. 0 to 18.....75&5@75&10%
Galv., Nos. 0 to 18.... .....70@70&10%
Tin'd, Tin'd list Nos. 0 to 18.70@70&10%
Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26..80&5%
Br. and Ann'd, Nos. 27 to 36...82½&5%
Tinned.....
Tinned Broom Wire 18 to 21, ₩ ℔...4½¢
Galvanized Fence, Nos. 8 and 9..70&10%
Brass, list Jan. 18, 1884.... ....25@33⅓%
Copper, list Jan. 18, 1884.....33⅓@40%
Annealed Wire on Spools.....60%
Malin's Steel and Tin'd on Spools.....60%
Malin's Brass and Cop. on Spools.....50%
Tate's Spooled, Tin'd & Annealed..60&5%
Tate's Spooled Cop. and Brass.....50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$3.00 to $, 30%
Steel Music Wire, 12 to 30...60@70¢ ₩ ℔
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.

Bright Wire Goods—
Standard list.....35%

Wire Cloth and Netting.
Painted Screen Cloth, good quality ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....70&10@75%

Wire, Barb.—Prices unsettled. See Trade Report.

Wire Rope—See Rope, Wire.

Wrenches—
American Adjustable.....40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....40&10@50%
Coes' Genuine.....50&2%
Coes' "Mechanics'".....50&10&2%
Girard Standard.....65&10%
Lamson & Sessions' Engineers'.....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural..... 75&10@
Lamson & Sessions' Agric'l.. 75& 10&10%
Bemis & Call's
Pat. Combination.....
Merrick's Pattern.....30%
Brigg's Pattern.....30%
Cylinder or Gas Pipe.....40&2%
No. 3 Pipe.....40&10%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ doz $4.00, 40%
Webster's Pat. Combination.....30%
Boardman's.....30&10%
Always Ready.....35&5%
Alligator.....50%
Donohue's Engineer.....30&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5
Walker's.....
Diamond Steel.....35&10%
Cincinnati Brace Wrenches.....30&10%
Tafts' Vise Wrench.....55&10&3%

Wringers, Clothes—
Am. Wringer Co.'s list, July 15, 91..3% cash
Colby Wringer Co., list Sept. 1, '91..2% cash
Lovell Mfg Co., list Jan 1, 1892..2 % cash
Peerless Mfg. Co., list Feb., 1892..2% cash

Wrought Goods—
Staples, Hooks, &c., list March 17, 1892, 50&2½

PAINTS, OILS AND COLORS.—Wholesale Prices.

Animal and Vegetable Oils.

Linseed, City, raw..per gal.	40	@	..
Linseed, City, boiled.....	43	@	..
Linseed, Western, raw.....	39	@	..
Lard, City, Extra Winter..	57	@	58
Lard, City, Prime.....	56	@	57
Lard, City, Extra No. 1.....	44	@	45
Lard, City, No. 1.....	40	@	42
Lard, Western, prime.....	55	@	56
Cotton-seed, Crude, prime.	28½	@	29
Cotton-seed, Crude, off grades.....	26	@	27
Cotton-seed, Summer Yellow, prime.....	31½	@	32
Cotton-seed, Summer Yellow, off grades.....	29	@	31
Sperm, Crude.....	68	@	..
Sperm, Natural Spring.....	67	@	70
Sperm, Bleached Spring.....	72	@	75
Sperm, Natural Winter.....	73	@	76
Sperm, Bleached Winter...	78	@	81
Whale, Crude.....	..	@	45
Whale, Natural Winter.....	54	@	55
Whale, Bleached Winter....	57	@	58
Whale, Extra Bleached.....	59	@	60
Sea Elephant, Bleached Winter.....	62	@	63
Menhaden, Crude, Sound....	..	@	31
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed..	37	@	38
Menhaden, Bleached W'ter.	38	@	39
Menhaden, Extra Bleached	40	@	42
Tallow, City, prime.....	44	@	45
Tallow, Western, prime....	42½	@	43
Cocoanut, Ceylon.....	5½	@	5½
Cocoanut, Cochin.....	6	@	6¼
Cod, Domestic	38	@	40
Cod, Foreign.....	43	@	45
Red Elaine.....	34	@	36
Red Saponified..... ₩ ℔	4½	@	5
Bank.....per gal	35	@	36
Straits.....	36	@	37
Olive, Italian, bbls.....	60	@	62
Neatsfoot, prime.....	50	@	60
Palm, prime, Lagos....₩ ℔	6	@	6¼

Mineral Oils.

Black, 29 gravity, 25 @ 30 cold test.....per gal	7	@	7½
Black, 29 gravity, 15 cold test.....	3	@	3½
Black, 29 gravity, summer.	6	@	6½
Cylinder light filtered. ..	15	@	
Cylinder, dark, filtered	12	@	15
Paraffine, 23½ @ 24 gravity.	13½	@	14
Paraffine, 25 gravity.....	12	@	12½
Paraffine, 28 gravity.....	8	@	8 ½
Paraffine, red.23½@24 gr'ty	11	@	12

Paints and Colors.

Barytes, Foreign, ₩ ton.	$32.00	@	$34.00
Barytes, Amer. floated...	20.00	@	$25.00
Barytes, Amer. No. 1.....	15.00	@	17.00
Barytes, Amer. No. 2.....	13.00	@	16.00
Barytes, Amer., No. 3....11.00		@	12.00
Blue, Celestial.....₩ ℔	6	@	8
Blue, Chinese	40	@	50
Blue Prussian.....	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½@		1
Brown, Vandyke, Amer..	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk. 3.10		@	..
Carmine, No. 40, in boxes or barrels 3.20		@	
Carmine, No. 40, in ounce bottles..... 4.20		@	
Chalk, in bulk.....₩ ton. 1.80		@	1.90
Chalk, in bbls..₩ 100 ℔. 33		@	40
China Clay, English.....₩ ton. 13.00		@	18.00
Cobalt Oxide, prep'd.... 9.00		@	11.00
Cobalt Oxide, black..... lots 100 ℔. 2.50		@	....
Cobalt, Oxide, black..... less 100 ℔. 2.65		@	2.90
Green, Paris, in bulk.....	13	@	15½
Green Paris, 170 @ 175 ℔ kegs.....	14	@	16
Green, Paris, small pack.	15½	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrome, pure....	22	@	25
Lead, Eng., B.B. white....	9½	@	10
Lead, Amn. White, dry or in oil:			
Kegs, lots less than 500 ℔...	7¼	@	7½
Kegs, lots 500 ℔ to 5 tons....	6¾	@	7
Kegs, lots 5 tons to 12 tons..	6¾	@	6¾
Kegs, lots 12 tons and over..	6¼	@	6¾
Lead White in oil 25 ℔ tin pails add to keg price.....		@	¼
Lead, White, in oil, 12½ ℔ tin pails, add to keg price		@	½
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price.		@	2½
Lead, Red, bbls. and ½ bbls....	6¼	@	7¼
Lead Red, kegs.....	6¾	@	7¼
Litharge, kegs.....	6¼	@	7½
Litharge, bbls. and ½ bbls.....	6¼	@	7¼

TERMS, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle.....	1.35	@	1½
Ocher, French Washed.....	1½	@	2½
Ocher, German Washed....	1½	@	2
Ocher, American.....	½@		1½
Orange Mineral, English...	8½	@	9
Orange Mineral, French....	10	@	10½
Orange Mineral, German ..	8½	@	09
Orange Mineral, American.	8½	@	8¾
Paris White, English Cliff-stone.....	1.00	@	1.15
Paris White, American.....	70	@	75
Red, Indian, English.....	5½	@	7
Red, Indian, American....	2	@	6½
Red, Turkey.....	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American.. ₩ 100 ℔.	1.00	@	1.10
Red, Venetian, English....	1.30	@	1.35
Sienna, Italian, Burnt and Powd.₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	2½
Sienna, Ital., Raw, Powd..	4½	@	5½
Sienna, Ital., Raw Lumps..	1½	@	2½
Sienna, American, Raw....	1½	@	1¾
Sienna, American, Burnt and Powdered.....	1½	@	1¾
Talc, French.....	1½	@	1¾
Talc, American..... ..	0½	@	1¾
Terra Alba, Fr'ch. ₩ 100 ℔	75	@	80
Terra Alba, English	70	@	75
Terra Alba, American No.1	70	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Bat. and Powd..... ₩ ℔	3½	@	4
Umber, Turkey Bat. Ln	2½	@	3
Umber, Turkey, Raw and Powdered.....	3½	@	..
Umber, Turkey, R'w Lmps	2½	@	2¾
Umber, Turkey, Bnt. Amer.	1½	@	1¾
Umber, Turkey, R'w Amer.	1½	@	1¾
Yellow, Chrome.....	10	@	25
Vermilion Americ. Lead..	11½	@	12
Vermilion, Quicks'er, bulk.	57	@	..
Vermilion, Quicks'er, bags.	58	@	..
Vermilion Quicksilver, smaller pkgs.....	62	@	..
Vermilion English Import	85	@	90
Vermilion, Imitation, Eng.	8	@	35
Vermilion, Trieste.....	90	@	92½
Vermilion, Chinese.....	92½	@	95
Whiting, Common. ₩ 100 ℔	35	@	45
Whiting, Gilders'.....	50	@	60
Zinc, American, dry....₩ ℔	4½	@	5
Zinc, French, Red Seal.....	..	@	5½
Zinc, French, Green Seal..	..	@	5½
Zinc, French, V. M. X.....	..	@	7
Zinc, Antwerp, Red Seal....	..	@	7½
Zinc, Antwerp, Green Seal	..	@	5½
Zinc, German, L. Z. O....	..	@	6½
Zinc, V M. in Poppy Oil, G. Seal, lots of 1 ton and over.....	10½	@	11¼
lots less than 1 ton	11	@	11½
Zinc, V. M. in Poppy Oil, Red Seal.....	..	@	..
lots of 1 ton and over....	10	@	10¾
Lots of less than 1 ton....	10¾	@	10¾

DISCOUNTS.—French Zinc.—Discounts to buyers of 10- bbl. lots of one or assorted grades, 1 %; 25 bbls, 2 %, 50 bbls. 4 %. No discount allowed on less than bbl. lots.

Colors in Oil.

Black, Drop, Frankfort	25	@	30
Black, Drop, English.....	12	@	15
Black, Drop, Dom stic	7	@	10
Black, Lampblack, Best....	30	@	35
Black, Lampblack, Common	7	@	15
Black, Ivory.....	8	@	15
Blue, Chinese.....	30	@	40
Blue, Prussian.....	20	@	45
Blue, Ultramar.ine.....	12	@	15
Brown, Vandyke.....	7	@	12
Green, Chrome.....	8	@	13
Green, Paris.....	15	@	18½
Sienna, Raw.....	7	@	14
Sienna, Burnt.....	7	@	14
Umber Raw.....	7	@	10
Umber, Burnt	7	@	10

Putty.

In barrels and ½ bbls....	.01½	@	.01¾
In tubs.....	.01¾	@	.01¾
In tin cans.....	.01½	@	.02¼
In bladders.....	.01½	@	.02¼

Spirits Turpentine.

In regular bbls	34½	@	..
In machine bbls.....	35	@	..

Glue.

Low Grade..... ₩ ℔	8	@	10
Cabinet.....	12	@	15
Medium White.....	13	@	15
Extra White..	17	@	20
French	10	@	22
English....	10	@	15
Irish	13	@	

CURRENT METAL PRICES.

APRIL 27, 1892.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports

IRON AND STEEL.

Bar Iron from Store.

Common Iron: ¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in...	₩ lb 1.90 @ 2.00¢
Refined Iron: ¾ to 2 in. round and square. 1 to 4 in. x ⅜ to 1½ in.... 4½ to 6 in. x ⅜ to 1 in.	₩ lb 2.00 @ 2.20¢
1 to 6 in. x ¼ and 5-16	₩ lb 2.20 @ 2.40¢
Rods—⅜ and 11-16 round and sq.	₩ lb 2.10 @ 2.30¢
Bands—1 to 6 x 3-16 to No. 12	₩ lb 2.30 @ 2.50¢
"Burden Best" Iron, base price	₩ lb 3.00¢
Burden's "H. B. & S." Iron, base price	₩ lb 2.80¢
"Ulster"	₩ lb 3.00¢
Norway Bars	3.75 @ 4.00¢
Norway Shapes	4.50 @ 5.00¢

Merchant Steel from Store.

	Per pound
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store.

	Black. Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ lb 3 @	3½¢
17 to 20	₩ lb 3¼ @	3¾¢
21 to 24	₩ lb 3¼ @	3¾¢
25 and 26	₩ lb 3⅜ @	3¾¢
27	₩ lb 3½ @	3¾¢
28	₩ lb 3⅝ @	4 ¢
American B. B.	₩ lb 4¢ @ 4½¢	

Galvanized Sheet Iron.

	B. B.	2d qual
Nos. 10 to 16	₩ lb 4.20¢	4 ¢
17 to 22	₩ lb 4.60¢	4.30¢
23 to 24	₩ lb 4.90¢	4.70¢
25 to 26	₩ lb 5.30¢	5 ¢
27	₩ lb 5.60¢	5.30¢
28	₩ lb 6 ¢	5.70¢
29 to 30	₩ lb 7 ¢	6.70¢
Genuine Russia, according to assortment	₩ lb 11½¢ @ 11½¢	
Patent Planished	₩ lb A, 10¢; B, 9¢	
Craig Polished Sheet Steel	₩ lb, 6½¢	

English Steel from Store.

Best Cast	₩ lb 15 ¢
Extra Cast	₩ lb 16½ @ 17 ¢
Swaged, Cast	₩ lb 16 ¢
Best Double Shear	₩ lb 15 ¢
Blister, 1st quality	₩ lb 12 ¢
German Steel, Best	₩ lb 10 ¢
2d quality	₩ lb 9 ¢
3d quality	₩ lb 8 ¢
Sheet Cast Steel, 1st quality	₩ lb 15 ¢
2d quality	₩ lb 14 ¢
3d quality	₩ lb 12½¢
R. Mushet's "Special"	₩ lb 48 ¢
" " "Titanic"	₩ lb 20 ¢

METALS.

Tin.

	Per lb
Banca, Pigs	22½@ ..¢
Straits, Pigs	21½@22 ¢
Straits in Bars	23½¢

Tin Plates.

Duty: 2.2 cents per pound.

Charcoal Plates.—Bright.

Guaranteed Plates command special prices, according to quality.

			Per box.
Melyn and Calland Grade	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" " "	IC, 12	x12..	@ 6.25
" " "	IC, 14	x20..	@ 6.00
" " "	IC, 20	x28..	@ 12.00
" " "	IX, 10	x14..	@ 7.50
" " "	IX, 12	x12..	@ 7.75
" " "	IX, 14	x20..	@ 7.50
" " "	IX, 20	x28..	@ 15.00
" " "	DC, 12½	x17.	@ 5.50
" " "	DX, 12½	x17..	@ 7.00

Coke Plates.—Bright.

Steel Coke.—IC, 10 x 14, 14 x 20		$5.70	@ $5.75
	10 x 20		@ 8.50
	20 x 28	11.50	@ 12 00
IX, 10 x 14, 14 x 20			@ 7.00
BV Grade.—IC, 10 x 14, 14 x 20			@ 5.75

Charcoal Plates.—Terne.

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20		@ $5.75
	20 x 28	@ 11.00
IX, 14 x 20		@ 6.50
	20 x 28	@ 13.00
Abecarne Grade.—IC, 14 x 20		@ 5 65
	20 x 28 .. 10.75	@ 11.00
IX 14 x 20		@ 6 50
	20 x 28	@ 13 00

Tin Boiler Plates.

IXX, 14 x 20 ..... 112 sheets	@ $13.35
IXX, 14 x28 ..... 112 sheets	@ 14.60
IXX 14 x 31 ..... 112 sheets	@ 16.00

Copper.

Duty: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot

Lake	@ 13 ¢
Ansonia Grade Arizona	@ 12½¢
Ansonia Grade Casting	@ 12 ¢

Sheet and Bolt.

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10 % @ 20 %, according to size of order.

Not wider than	Not longer than	And longer than	Weights per square foot and prices per pound. Over 64 oz.	32 to 64 oz.	24 to 32 oz.	16 to 24 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
30	72		22	22	22	23	24	25	28	30	
30		72	22	22	22	23	25	27	31	...	
36	96		22	22	22	24	26	30	33	....	
36		96	22	22	23	25	27	31	35	....	
48	96		22	22	24	26	28	32	....	....	
48		96	22	22	25	27	29	33	....	....	
60	96		22	22	25	27	29	34	....	....	..
60		96	23	23	28	....	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....	....
Over 84 in. wide			25	27	....	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, per pound ..... 22¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ lb over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ lb over the foregoing prices.

Copper Bottoms, Pits and Flats.

	Per pound
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms

10 % @ 20 % discount, according to size of order.

Copper Wash Boat Bottoms.

Tinned ..... ₩ lb 34¢, 10% @ 20 %

Tinning.

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each ..... 8¢

Tinning sheets on one side, 30 x 60 each ..... 30¢

For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each ..... 15¢

For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... 12¢

For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each ..... 12¢

Tinning sheets on one side, other sizes, per square foot ..... 2½¢

For tinning both sides double the above prices.

Planished Brass and Copper.

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ lb
14 oz.	25¢ ₩ lb
12 oz.	27¢ ₩ lb

Seamless Brass Tubes.

Net.

Dec. 16, 1891.

O. G.	N. G.	⅜	¼	⅝	½	⅝	1	1¼
8-14	6-12	30	26	23	22	21	20	17
15	13	31	26	24	23	22	21	18
16	14	32	27	25	24	23	22	18
17	15	33	28	26	25	24	23	19
18	16	35	29	27	25	24	23	20
19	17	36	30	28	27	26	25	22
20	18-19	37	32	30	29	28	27	24
21	20	39	34	32	31	30	29	27
22	21	41	35	34	32	31	30	29
23	22	43	37	35	34	33	32	32
24	23	46	39	37	36	34	33	34
25	24	49	42	39	38	37	36	35

Copper Tubes, 3¢ ₩ lb additional.

Copper Bronze and Gilding Tube, 3¢ ₩ lb additional

Brazed Brass Tubing. (To No. 20, inclusive.

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	1.50
Fancy Tubing, Brass, to No. 20, inclusive	45¢ ₩ lb
Bronze Tubing, 2¢ ₩ lb more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass.

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2 / 10	in. 10 / 12	in. 12 / 14	in. 14 / 16	in. 16 / 18	in. 18 / 20	in. 20 / 22	in. 22 / 24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.23	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.23½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24 / 26	in. 26 / 28	in. 28 / 30	in. 30 / 32	in. 32 / 34	in. 34 / 36	in. 36 / 38
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65

Discount from List 10 % to 25 %.

Brass and Copper Wire.

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0 26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 " " 20	.24	.26	.28	.32
No. 21, or 0.032 diam	.25	.27	.29	.33

Discount 10 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0 30	$0.34
No. 23	.28	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.62
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.83
No. 34	.64	.66	.68	.96
No. 35	.70	.72	.74	1.20
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	2.00	3.25
No. 40	2.60	2.62	2.60	5.75

— % discount.

Spring Wire, 2¢ ₩ lb advance.

Copper Belt and Hose Rivets and Burrs.

Per lb.		Per lb.
No. 5	49¢	No. 11 .. 56¢
No. 6	49¢	No. 12 .. 58¢
No. 7	49¢	No. 13 .. 60¢
No. 8	50¢	No. 14 .. 65¢
No. 9	52¢	No 15 .. 70¢
No 10	54¢	

60 % @ 10 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to ⅜ inch inclusive	18¢ ₩ lb
Over ⅜ to 3½ inches inclusive	17¢ ₩ lb
Over 3½ to 5 inches inclusive	18¢ ₩ lb

Piston Rods, Finished True, Smooth and Straight.

¼ to ⅜ inch inclusive	19¢ ₩ lb
Over ⅜ to 2 inches inclusive	19¢ ₩ lb
Over 2 to 3½ inches inclusive	19¢ ₩ lb
Over 3½ to 5 inches inclusive	2 ¢ ₩ lb

Spelter.

Duty: Pig, Bars and Plates, $1.50 ₩ 100 lb.

Western Spelter	5¼¢
Bertha (pure)	8¼ ¢

Zinc.

Duty: Sheet, 2½¢ ₩ lb.

600 lb casks	6½¢
Per lb	7

Lead.

Duty: Pig, $2 ₩ 100 lb. Old Lead, 2¢ ₩ lb. Pipe and Sheets 2½¢ ₩ lb.

American Pig	4½¢
Bar	5 ¢
Pipe, subject to discount 20 %	6½¢
Tin-Lined Pipe, subject to discount 20 %	15¢
Block Tin Pipes, subject to discount 20 %	37½¢
Sheet, subject to discount 20 %	7¢

Old Lead in exchange, 3½¢ ₩ lb.

Solder.

½ @ ½ (Guaranteed)	13½¢
No. 1	11½ @ 11½¢
Extra Wiping	12 @12½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

Antimony.

Cookson	₩ lb 15½@ 16 ¢
Hallett's	@ 12½¢

ALUMINUM.

Prices Per Ton.

Duty: 15 cents per pound.

Over 98 % pure	₩ lb .75
94 % @ 98 % pure	₩ lb .65

Old Metals.

Prices Paid in New York.

Heavy Copper	₩ lb 10 ¢
Light Copper	₩ lb 9 ¢
Heavy Brass	₩ lb 7 ¢
Light Brass	₩ lb 6 ¢
Lead	₩ lb 3½¢
Tea Lead	₩ lb 3½¢
Zinc	₩ lb 2½¢
No. 1 Pewter	₩ lb 14 ¢
No 2 Pewter	₩ lb 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton 5.00